UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY
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WATER
DIVISION

JUL 09 2019

Dr. Mary Anne Nelson
Water Quality Division Administrator
Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706-1255

Re: The EPA Review and Action on Idaho's New and Revised Water Quality Standards, Selenium Aquatic Life Criterion, Idaho Rule Docket 58-0102-1701

Dear Dr. Nelson:

Pursuant to Section 303(c)(3) of the Clean Water Act and 40 CFR Part 131, the U.S. Environmental Protection Agency approves the majority of Idaho's new and revised water quality standards addressing aquatic life criteria for selenium. The EPA disapproves the application of Idaho's Sage Creek site-specific selenium criterion to North Fork Sage and Pole Canyon Creeks and their tributaries. Details of the submitted water quality standards and the EPA's action are outlined below and in the enclosed Technical Support Document.

The National Marine Fisheries Service and the U.S. Fish and Wildlife Service have acknowledged that Idaho's selenium criterion at IDAPA 58.01.02.210 complies with the reasonable and prudent alternatives for selenium aquatic life criteria in the 2014 NMFS and 2015 FWS Biological Opinions.[1]

Background

By letter dated August 24, 2018, the Idaho Department of Environmental Quality submitted new and revised water quality standards at IDAPA 58.01.02.210.01, 58.01.02.210.03.d.i and 58.01.02.287 of Idaho's administrative code. The submission was received by the EPA on August 29, 2018. As set forth in the August 24 letter, these new and revised water quality standards were adopted and finalized by the 2018 Idaho Legislature, became effective under Idaho state law on March 28, 2018, and were certified by the Idaho Attorney General on August 16, 2018, as being duly adopted pursuant to state law. Idaho's process for adopting the submitted revisions, including the opportunity for public comment, is described in DEQ's submittal letter and its enclosures.

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[1] Letter dated October 26, 2018, from William M. Lind, Southern Snake Branch Chief, National Marine Fisheries Service, West Coast Region, to Angela Chung, Associate Director, Office of Water and Watersheds, Re: Implementation of Reasonable and Prudent Alternative for the Chronic Selenium Aquatic Life Criteria in the 2014 Biological Opinion on Idaho's Water Quality Standards for Toxic Substances
Letter dated November 29, 2018, from Gregory M. Hughes, State Supervisor, Idaho Fish and Wildlife Office, U.S. Department of the Interior, to Angela Chung, Associate Director, Office of Water and Watersheds, Re: Implementation of Reasonable and Prudent Alternative for the Chronic Selenium Aquatic Life Criteria in the 2015 Biological Opinion on Idaho's Water Quality Standards for Toxic Pollutants (01EIFW00-2014-F-0233)

The water quality standards changes submitted to the EPA for review and action are identified in an enclosure to DEQ's August 24, 2018 submittal letter, and include:

- New and revised chronic aquatic life criterion for selenium at IDAPA 58.01.02.210.01, including new footnote r and new footnote s to Idaho's table of numeric criteria for toxic substances.
- Deletion of the acute aquatic life criterion for selenium at IDAPA 58.01.02.210.01 from Idaho's table of numeric criteria for toxic substances.
- Revision to the frequency and duration provision for aquatic life criteria at IDAPA 58.01.02.210.03.d.i.
- Five new site-specific aquatic life criteria for selenium at new section IDAPA 58.01.02.287.

The EPA's Approval Action

Pursuant to Section 303(c)(3) of the CWA and 40 CFR Part 131, the EPA approves the submitted changes at IDAPA 58.01.02.210. This includes revisions and additions to Idaho's chronic aquatic life criterion for selenium in the table of numeric criteria for toxic substances at IDAPA 58.01.02.210.01, portions of the applicable footnotes to the selenium criterion, deletion of the acute aquatic life criterion for selenium and revised language at IDAPA 58.01.02.210.03.d.i. to the frequency and duration related to aquatic life criteria. In addition, the EPA approves Idaho's new site-specific selenium criteria at IDAPA 58.01.02.287, with the exception of the application of the Sage Creek site-specific criterion (IDAPA 58.01.02.287.03) to North Fork Sage Creek and its tributaries and Pole Canyon Creek and its tributaries.

The EPA is not acting on unrevised language and previously existing provisions. In addition, the EPA is not acting on certain footnotes because, as discussed in the enclosed Technical Support Document, the EPA has reviewed and concluded that this new language is not considered a water quality standard subject to the EPA review and action under Section 303(c) of the CWA.

Nothing in this action shall constitute an approval of a water quality standard that applies to waters within Indian Country as defined in 18 U.S.C. § 1151. The EPA, or authorized Indian Tribes, as appropriate, will retain responsibilities for water quality standards for waters within Indian Country.

The EPA's Disapproval Action

Pursuant to Section 303(c)(3) of the CWA and 40 CFR Part 131, the EPA disapproves the application of the site-specific criterion at IDAPA 58.01.02.287.03 to North Fork Sage Creek and its tributaries and Pole Canyon Creek and its tributaries. The EPA's disapproval is based on a determination that the available information does not support the presumption that the application of the site-specific criterion to North Fork Sage and Pole Canyon Creeks, including all tributaries, is appropriate and protective of the designated uses as required under 40 CFR 131.6 and 40 CFR 131.11.

The EPA appreciates the productive technical discussions with DEQ and the J.R. Simplot Company during the agency's review of this site-specific criterion. We look forward to continuing the collaborative effort regarding Simplot's proposal to collect additional supporting data for the North Fork Sage Creek and Pole Canyon Creek.

Selenium Criterion in Effect for Clean Water Act Purposes

Until the EPA approves the application of any new site-specific selenium criterion to North Fork Sage Creek and its tributaries, and Pole Canyon Creek and its tributaries, the selenium criterion that the EPA approves today at IDAPA 58.01.02.287.05 is the effective selenium criterion for CWA purposes in these waters and consists of the following tissue and water column elements:

Fish Tissue Elements (mg/kg dw)			**Water Column Elements (µg/L)**		
Egg-Ovary	Whole Body	Muscle	Water Lentic	Water Lotic	Short Term/Intermittent
19.0[1]	9.5[2]	13.1[2]	1.5	3.1	Intermittent Exposure Equation at IDAPA 58.01.02.210.01. Footnote #4 to footnote r

1. *Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Not to be exceeded.*
2. *Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Not to be exceeded.*

Remedy to Address the Disapproval

In order to determine what water column criterion element would be protective for North Fork Sage Creek, Pole Canyon Creek, and their tributaries, the EPA has the following suggestions. For North Fork Sage creek and its tributaries, the EPA suggests collecting paired fish and water column data in order to calculate a site-specific bioaccumulation factor and subsequently a water column criterion, or sufficient data to populate the mechanistic model recommended in the EPA's 2016 CWA Section 304(a) selenium criterion. For Pole Canyon Creek and all tributaries where fish are not present, the EPA suggests collecting sufficient data to populate the mechanistic model. This would require the collection of multiple data points of paired particulate samples and water samples to calculate appropriate enrichment factors for these sites. Additional data may also be collected to determine the most appropriate trophic transfer factors at the site, but site-specific enrichment factor data are the most important to have in order to run the mechanistic model effectively.

Finally, we appreciate receiving your letter on July 9, 2019 reiterating DEQ's commitment to develop guidance for the implementation of the selenium criteria, including implementation of the fishless water translator to ensure protection of aquatic life in fishless waters and waters downstream of fishless waters in the subsections of the Blackfoot and Bear Lake Subbasins (IDAPA 58.01.02.287.01 and 58.01.02.287.02, respectively). It is critical that the criterion derivation approach for fishless waters ensures that any water column criteria derived using downstream fish and upstream water will also be protective of the in-stream community of invertebrates in any fishless water. The EPA strongly recommends that DEQ include in its selenium implementation guidance methodologies for ensuring protection of aquatic life in fishless waters and a method for adjusting water column values if potential issues are indicated by invertebrate monitoring. The staff at the EPA remain available to provide technical assistance to DEQ as it develops the guidance and associated sampling protocols. The guidance will be critical in providing clarity to the regulated community and the EPA as the State implements these complex criteria.

We appreciate DEQ's ongoing work to update Idaho's water quality standards and I would particularly like to recognize the thoughtful and collaborative efforts by Jason Pappani in helping to shepherd this work to completion. If you have any questions regarding this letter, please contact me or Lisa Macchio of my staff at (206) 553-1834.

Sincerely,

Angela Chung for

Daniel D. Opalski
Director

Enclosure

cc: Jason Pappani, Surface Water Bureau Chief, DEQ

Technical Support Document

The EPA's Action on Idaho's New and Revised Aquatic Life Water Quality Criteria for Selenium

Submitted August 29, 2018

July 9, 2019

Technical Support Document

The EPA's Action on Idaho's New and Revised Aquatic Life Water Quality Criteria for Selenium

Submitted August 29, 2018

Table of Contents

I. Introduction

This document provides the basis for the U.S. Environmental Protection Agency's (EPA or the Agency) determination under section 303(c) of the Clean Water Act (CWA), 33 U.S.C. 1313(c), and the federal water quality standards regulations at 40 CFR Part 131, to partially approve and partially disapprove certain new and revised water quality standards (WQS) submitted to the EPA by the Idaho Department of Environmental Quality (DEQ) on August 24, 2018.[1] The new and revised WQS contained in Idaho's Administrative Rules (IDAPA 58.01.02) were duly adopted into Idaho's WQS regulations consistent with state law and became effective on March 28, 2018. The EPA received DEQ's submittal of the new and revised WQS on August 29, 2018.

New and revised provisions addressed in today's decision include revisions to Idaho's aquatic life criteria for selenium at IDAPA 58.01.02.210, Table of Numeric Criteria for Toxic Substances, including new footnotes to the table related specifically to selenium and clarification to the existing language related to frequency and duration components for Idaho's aquatic life criteria. A new section at IDAPA 58.01.02.287, Site-Specific Aquatic Life Criteria for Selenium, includes five new selenium site-specific criteria (SSC).

Today's action addresses the approval of only those submitted changes to IDAPA 58.01.02.210 and IDAPA 58.01.02.287 that are new or revised WQS for the purposes of CWA Section 303(c), as well as the disapproval of the application of Idaho's selenium site-specific criterion at IDAPA 58.01.02.287.03 to certain waters. The EPA is not acting on the following because the new language is not considered a WQS subject to EPA review and action under CWA Section 303(c):

- parts of #1, #2, #3 to footnote r and the entirety of footnote s at IDAPA 58.01.02.210;
- parts of footnotes #1, #2, #3, #5 to the selenium site-specific criteria at IDAPA 58.01.02.287.01 and 287.02;
- parts of footnotes #1, #2, #3 to the selenium site-specific criteria at IDAPA 58.01.02.287.03 and 287.04; and
- parts of footnotes #1 and #2 to the selenium site-specific criteria at IDAPA 58.01.02.287.05.

The selenium criteria the EPA is approving at IDAPA 58.01.02.210.01 and IDAPA 58.01.02.287 are the effective selenium criteria for Clean Water Act purposes in waters of the state of Idaho, except in waters in Idaho within Indian Country. The EPA or authorized Indian Tribes, as appropriate, will retain responsibilities for water quality standards for waters within Indian Country.

[1] Letter dated August 24, 2018 from Barry Burnell, Administrator Water Quality Division, Idaho Department of Environmental Quality, to Dan Opalski, Director, Office of Water and Watersheds, Region 10, U.S. Environmental Protection Agency, RE: Submission of revised water quality standards for approval: Aquatic life criteria for selenium, Idaho rule docket 58-0102-1701.

This document is organized as follows:

- Part II of this document provides additional background information about Idaho's August 29, 2018 WQS submittal.
- Parts III and IV of this document provide the basis for this action under CWA Section 303(c) and the EPA's implementing regulations at 40 CFR Part 131.
- Part V discusses those parts of Idaho's WQS submission that the EPA is not acting on because the EPA has determined that the provisions are not WQS under the CWA.

II. Background

A. Clean Water Act Requirements for Water Quality Standards

Under section 303(c) of the CWA and federal implementing regulations at 40 CFR §131.4, states have the primary responsibility for reviewing, establishing, and revising WQS, which include the designated uses of a waterbody or waterbody segment, the water quality criteria necessary to protect those designated uses, and an antidegradation policy. States are required to review applicable WQS periodically, and as appropriate, modify these standards (40 CFR §131.20). Each state must follow its own legal procedures for adopting such standards (40 CFR §131.5) and submit certification by the state's attorney general, or other appropriate legal authority within the state, that the WQS were duly adopted pursuant to state law (40 CFR §131.6(e)).

Section 303(c)(2)(B) of the CWA requires states to establish water quality criteria for toxic pollutants listed pursuant to section 307(a)(1) for which the EPA has published criteria under section 304(a) where the discharge or presence of these toxics could reasonably be expected to interfere with the designated uses adopted by the state. In adopting such criteria, states should establish numeric values based on one of the following: (1) CWA Section 304(a) guidance (2) CWA Section 304(a) guidance modified to reflect site-specific conditions; or, (3) other scientifically defensible methods (40 CFR §131.11(b)(1)). In addition, states should establish narrative criteria where numeric criteria cannot be determined or to supplement numeric criteria (see 40 CFR §131.11(b)(2)).

The EPA considers four questions (described below) when evaluating whether a particular provision is a new or revised WQS. If all four questions are answered "yes," then the provision would likely constitute a new or revised WQS that the EPA has the authority and duty to approve or disapprove under CWA Section 303(c)(3).[2]

(1) Is it a legally binding provision adopted or established pursuant to state or tribal law?
(2) Does the provision address designated uses, water quality criteria (narrative or numeric) to protect designated uses, and/or antidegradation requirements for waters of the United States?
(3) Does the provision express or establish the desired condition (e.g., uses, criteria) or instream level of protection (e.g., antidegradation requirements) for waters of the United States immediately or mandate how it will be expressed or established for

[2] See the EPA's *What is a New or Revised Water Quality Standard Under CWA 303(c)(3)? Frequently Asked Questions*, October 2012

such waters in the future?

(4) Does the provision establish a new WQS or revise an existing WQS?

Furthermore, the EPA considers non-substantive edits to existing WQS to constitute new or revised WQS that the EPA has the authority to approve or disapprove under section 303(c)(3). While these edits and changes do not substantively change the meaning or intent of the existing WQS, the EPA believes it is reasonable to treat such edits and changes in this manner to ensure public transparency as to which provisions are applicable for CWA purposes. The EPA notes that the scope of its review and action on non-substantive edits or editorial changes extends only to the edits or changes themselves. The EPA is not re-opening or reconsidering the underlying WQS which are the subject of the non-substantive edits or editorial changes.

Finally, the federal WQS regulations at 40 CFR §131.21 state, in part, that when the EPA disapproves a state's WQS, the EPA shall specify the changes that are needed to ensure compliance with the requirements of section 303(c) of the CWA and federal WQS regulations.

B. Overview of Idaho's August 29, 2018 WQS Submission

In 2015, the National Oceanic and Atmospheric Administration (NOAA) and United States Fish and Wildlife Service (FWS) completed Biological Opinions (BiOps) on Idaho's numeric aquatic life criteria for toxic substances.[3,4] The BiOps identified the adoption of a new chronic criterion for selenium that would be protective of listed species as part of a Reasonable and Prudent Alternative (RPA) for selenium. As a result of the RPA in the BiOps, Idaho initiated revisions to its aquatic life criteria for selenium.

DEQ held negotiated rulemaking meetings pursuant to Idaho Code § 67-5220 and IDAPA 58.01.23.810-815. The Notice of Negotiated Rulemaking along with a preliminary draft rule was published and made available for public review in the April 2017 issue of the Idaho Administrative Bulletin.

Meetings were held on April 27, June 13, and July 25, 2017. Key information related to the rule was posted on the DEQ rulemaking web page and distributed to the public. A total of four drafts of the rule were prepared. Each draft had a public comment period in addition to negotiated rulemaking meetings. The fourth draft was published as the proposed rule in the September 5, 2017 Idaho Administrative Bulletin followed by a formal 30-day public comment period.

The rule was presented to the Idaho Board of Environmental Quality on November 16, 2017 and adopted as a pending rule without further change. The pending rule was noticed in the December 2017 Idaho Administrative Bulletin and was finalized by the 2018 Idaho Legislature during the 2018 legislative session. It became effective under Idaho law on March 28, 2018.

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[3] FWS 2015. *Biological Opinion for the Idaho Water Quality Standardsf or Numeric Water Quality Criteria/or Toxic Pollutants*, OIEIFW00-2014-F-0233. U.S. Fish and Wildlife Service, Portland, OR. June 25, 2015.

[4] NOAA 2014. *Endangered Species Action Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fisher Conservation and Management Act Essential Fish Habitat (EFH) Consultation.* NMFS No. 2000-1484. National Marine Fisheries Service, Seattle, WA. May 7, 2014.

Idaho's new and revised statewide selenium criterion as well as the five selenium site-specific criteria replace the previous water column-based criterion for selenium with a new four-element criterion. Consistent with the EPA's Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2016 (hereafter referred to as the "EPA's 304(a) national recommendation"), the four elements of Idaho's statewide and site-specific criteria consist of (1) a fish egg-ovary element, (2) a fish whole-body and/or muscle, (3) water column values for lentic (still water) and lotic (running water) aquatic systems, and (4) a water column intermittent element to account for potential chronic effects from short-term exposures.[5] See Section II.D., below for a summary of the EPA's 304(a) national recommendation. In addition, Idaho's revised WQS for selenium explicitly affirms that the whole-body or muscle elements supersede the water column element, and the egg-ovary element supersedes any other element, consistent with the EPA's 304(a) national recommendation.[6]

DEQ maintains an online record of the selenium rulemaking that includes the various drafts of the rule, comments received, presentations given, and materials distributed. These documents can be accessed at: http://www.deq.idaho.gov/laws-rules-etc/deq-rulemakings/docket-no-58-0102-1701/.

DEQ's August 29, 2018 submittal package includes the following:

1) Cover letter, briefly describing the rulemaking, its justification, and the contents of the package supporting the rule.
2) April 5, 2017 Notice of Negotiated Rulemaking.
3) September 9, 2017 Notice of Proposed Rule announcing opening of 30-day public comment period on proposed rule.
4) Summary of negotiated rulemaking prepared for DEQ's Board.
5) Summary of public comment and DEQ's response.
6) December 2, 2017 Notice of Pending Rule -Announcing adoption by the DEQ Board.
7) Notice of final rules from May 2, 2018 Administrative Bulletin, docket 58-0102-1701.
8) Idaho Attorney General's certification that the rules were adopted according to state law.
9) Supplemental justification for the statewide rule and five site-specific criteria.
10) Technical justification for selenium site-specific criteria for aquatic life in the Upper Blackfoot River and Georgetown Watersheds.
11) Technical justification for selenium site-specific criteria for aquatic life in Hoopes Spring, Sage Creek, and Crow Creek near the Smoky Canyon Mine.
12) Technical justification for a selenium site-specific criterion for aquatic life in portions of Idaho.

[5] USEPA (U.S. Environmental Protection Agency). 2016. *Aquatic Life Ambient Water Quality Criterion for Selenium–Freshwater 2016.* EPA 822-R-16-006. U.S. Environmental Protection Agency, Office of Water, Washington, DC. https://www.epa.gov/wqc/aquatic-life-criterion-selenium-documents

[6] IBID

Although DEQ's final rule adoption took effect under state law on March 28, 2018, the EPA's approval under CWA Section 303(c) is required before the WQS are effective for CWA purposes.

C. Background on Idaho's Five New Selenium Site-Specific Criteria

Four of the five site-specific criteria Idaho developed were in response to proposals from NuWest Industries and J.R. Simplot Company (Simplot). The selenium site-specific criteria developed by NuWest Industries for the Upper Blackfoot River and Georgetown Creek watersheds are contained in IDAPA 58.01.02.287.01 and 58.01.02.287.02. The selenium site-specific criteria developed by J.R. Simplot Company for Hoopes Spring, Sage Creek, and Crow Creek near the Smoky Canyon Mine are contained in IDAPA 58.01.02.287.03 and 58.01.02.287.04. The fish tissue elements of the site-specific criteria for these sites (*i.e.*, Upper Blackfoot River, Georgetown Creek, Hoopes Spring, Sage Creek, and Crow Creek) were developed using the most sensitive resident species approach.

The naturally limited fish diversity and knowledge of all species occurring in these waters is the supporting basis and rationale for use of the most sensitive species approach to derive tissue elements for these waters. Each of the sites supports a naturally limited fish assemblage, documented over the years by numerous fish surveys. Furthermore, regarding the development of the site-specific criteria for waters near the Smoky Canyon Mine, Simplot Simplot conducted laboratory reproductive studies examining toxicity of selenium on resident fish, including yellowstone cutthroat trout and brown trout and performed significant monitoring of selenium in fish, invertebrates, sediment and water column within those waters. However, Simplot has acknowledged that data for North Fork Sage and Pole Canyon Creeks are limited and that additional selenium monitoring and data collection for these waters are needed in order to support derivation of site-specific criteria for these creeks. Simplot has stated that they will be developing a workplan that will focus on this additional work effort.[7]

The fifth site-specific criterion was developed by DEQ and was derived using the recalculation procedure which deleted sturgeon data from the database used to derive the EPA's national 304(a) recommendation. This site-specific criterion applies to waters in Idaho outside of white sturgeon's historical range which do not provide required habitat elements to maintain a self-propagating sturgeon population. The EPA's guidance on deriving site-specific aquatic life criteria provides the recalculation procedure as a method for modifying national criteria to derive site-specific criteria to account for differences in resident species sensitivity.[8, 9]

The details regarding the scientific basis and derivation of these selenium site-specific criteria are provided in the following documents which are included in Idaho's submission:

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[7] May 9, 2019 letter from Alan Prouty, J.R. Simplot Company to Barry Burnell, Administrator, Water Division, Idaho Department of Environmental Quality.

[8] U.S. EPA. Guidelines for Deriving Numerical Aquatic Site-Specific Water Quality Criteria by Modifying National Criteria. U.S. EPA, Environmental Research Laboratory. EPA-600/3-84-099. October 1984.

[9] EPA. 2013. *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic life Criteria,* EPA-823-R-13-001. U.S. Environmental Protection Agency, Office of Science and Technology.

- Proposal for Site-Specific Selenium Criteria: Upper Blackfoot River and Georgetown Creek Watersheds for NuWest Industries, prepared by Arcadis (November 2017);
- Proposed Site-Specific Selenium Criterion for Hoopes Spring, Sage Creek, and Crow Creek near the Smoky Canyon Mine, prepared for J.R. Simplot Company by Formation Environmental (October 2017); and
- DEQ's Justification for Site-Specific Selenium Criterion for Aquatic Life in Portions of Idaho (November 2017).

In addition, the January 2012 report prepared for Simplot by Formation Environmental, entitled "Technical Support Document: Proposed Site-Specific Selenium Criterion, Sage and Crow Creeks" provides the culmination of extensive work begun by the company in 2006 and includes the interpretive findings for field and laboratory studies and literature review in support of the proposed criteria by Simplot.

D. The EPA's National Recommended Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2016

CWA Section 304(a)(l) requires the Administrator of the EPA to publish water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all identifiable effects on health and welfare that might be expected from the presence of pollutants in any body of water, including ground water. The 2016 "Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater, 2016," presents the EPA's updated chronic ambient water quality criterion for the protection of aquatic life based upon consideration of all available information relating to effects of selenium on aquatic organisms and is composed of four elements. All elements are protective against chronic selenium effects. Two elements are based on the concentration of selenium in fish tissue and two elements are based on the concentration of selenium in the water column. The recommended elements are: (1) a fish egg-ovary element; (2) a fish whole-body and/or muscle element; (3) a water column element (one value for lentic and one value for lotic aquatic systems); and (4) a water column intermittent element to account for potential chronic effects from short-term exposures (one value for lentic and one value for lotic aquatic systems). See Table 1, below. The assessment of the available data for fish, invertebrates, and amphibians indicates that a criterion value derived from fish will protect the aquatic community. All four criterion elements applied together should protect aquatic life from the chronic effects of exposure to total selenium in waters inhabited by fish, as well as "fishless waters."

When the 304(a) national recommendation was proposed, the EPA recommended that states and tribes adopt all four elements of the criterion into their water quality standards.

Alternatively, the EPA recommended that states develop, adopt, and submit for the EPA approval, either a site-specific water column criterion element (or set of lentic/lotic criterion element values), or a set of procedures to facilitate the translation of the fish tissue criterion concentration elements into site-specific water concentration values. A site-specific water column criterion element or set of lentic/lotic criterion element values can be developed using a mechanistic modeling approach or using the empirical bioaccumulation factor (BAF) approach, both described in Appendix K of the EPA's 304(a) national recommendation document, for the

specific waterbody or waterbodies. Any translation procedure must be scientifically defensible, produce repeatable, predictable outcomes, and result in criterion element values that protect the applicable designated use.

Table 1. Summary of the Recommended Freshwater Selenium Ambient Chronic Water Quality Criterion for Protection of Aquatic Life.

Media Type	**Fish Tissue[1]**		**Water Column[4]**	
Criterion Element	**Egg/Ovary[2]**	**Fish Whole Body or Muscle[3]**	**Monthly Average Exposure**	**Intermittent Exposure[5]**
Magnitude	15.1 mg/kg dw	8.5 mg/kg dw whole body or 11.3 mg/kg dw muscle (skinless, boneless filet)	1.5 µg/L in lentic aquatic systems 3.1 µg/L in lotic aquatic systems	$WQC_{int} = \frac{WQC_{30\text{-}day} - C_{bkgrnd}(1 - f_{int})}{f_{int}}$
Duration	Instantaneous measurement[6]	Instantaneous measurement[6]	30 days	Number of days/months with an elevated concentration
Frequency	Not to be exceeded	Not to be exceeded	Not more than once in three years on average	Not more than once in three years on average

1. Fish tissue elements are expressed as steady-state.
2. Egg/Ovary supersedes any whole-body, muscle or water column element when fish egg/ovary concentrations are measured.
3. Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured.
4. Water column values are based on dissolved total selenium in water and are derived from fish tissue values via bioaccumulation modeling. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data.
5. Where WQC30-day is the water column monthly element, for either a lentic or lotic water; C_{bkgrnd} is the average background selenium concentration, and the f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value of ≥ 0.033 (corresponding to 1 day).
6. Fish tissue data provide instantaneous point measurements that reflect integrative accumulation of selenium over time and space in fish population(s) at a given site.

III. The EPA Action on New and Revised Water Quality Standards

A. Idaho's New and Revised Selenium Aquatic Life Water Quality Criterion

The following provides the text of Idaho's submission of its revised selenium aquatic life criterion. This includes revisions and additions to selenium in Idaho's table of numeric criteria for toxic substances at IDAPA 58.01.02.210.01., the applicable footnotes and revised language at IDAPA 58.01.02.210.03.d.i. to the frequency and duration components of aquatic life criteria, and a new section at IDAPA 58.01.02.287, site specific aquatic criteria for selenium. All underlined text indicates language that is new and strikeout text indicates language that is removed.

IDAPA 58.01.02.210.01. – NUMERIC CRITERIA FOR TOXIC SUBSTANCES FOR WATERS DESIGNATED FOR AQUATIC LIFE, RECREATION, OR DOMESTIC WATER SUPPLY USE.

01. Criteria for Toxic Substances. The criteria of Section 210 apply to surface waters of the state as follows.

a. Columns B1 and B2 of the following table apply to waters designated for aquatic life use.

A		B Aquatic life	
(Number) Compound	CAS Number	CMC (µg/L) B1	CCC (µg/L) B2
10 Selenium	7782492	~~20~~ f s	~~5~~ f r

Footnote f to Idaho's Selenium Criterion:

f. Criterion expressed as total recoverable (unfiltered) concentrations.

Footnote r to Idaho's Selenium Criterion:

r. Chronic					Short-term
Egg-Ovary (mg/kg dw)	Fish Tissue (mg/kg dw)		Water Column (µg/L)		Water Column (µg/L)
Egg-Ovary	Whole-Body	Muscle	Water Lentic	Water Lotic	Water
15.1 [1]	8.5 [2]	11.3 [2]	1.5 (30 - day average)[3]	3.1 (30-day average) [3]	Intermittent Exposure Equation [3,4]
mg/kg dw – milligrams per kilogram dry weight, µg/L – micrograms per liter					

1. *Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species. Not to be exceeded; DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. Not to be exceeded; DEQ will evaluate all representative whole body or muscle data to determine compliance with this criterion element.*

3. *Water column values are based on dissolved total selenium in water and are derived from fish tissue values via bioaccumulation modeling. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance using methods provided in Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater, EPA-822-R-16-006, Appendix K: Translation of a Selenium Fish Tissue Criterion Element to a Site-Specific Water Column Value (June 2016).*

4. *Intermittent Exposure Equation =*

$$\frac{WQC - C_{bkgrnd}(1 - f_{int})}{f_{int}}$$

where WQC is the water column element, for either lentic or lotic waters; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to one day).

Footnote s to Idaho's Selenium Criterion:

s. There is no specific acute criterion for aquatic life; however, the aquatic life criterion is based on chronic effects of selenium on aquatic life and is expected to adequately protect against acute effects.

IDAPA 58.01.02.210.03.d.i. APPLICATION OF TOXICS CRITERIA

Frequency and duration for aquatic life toxics criteria. Column B1 criteria are concentrations not to be exceeded for a one-hour average more than once in three (3) years unless otherwise specified. Column B2 criteria are concentrations not to be exceeded for a four-day average more than once in three (3) years unless otherwise specified.

IDAPA 58.01.02.287 SITE-SPECIFIC AQUATIC LIFE CRITERIA FOR SELENIUM

287. Site-specific water column values (30-day average) are based on dissolved total selenium in water and are derived using a performance-based approach from fish tissue values via either the mechanistic modeling or empirical bioaccumulation factor (BAF) method in Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater, EPA-822-R-16-006, Appendix K: Translation of a Selenium Fish Tissue Criterion Element to a Site-Specific Water Column Value.

***287.01 Subsection of Blackfoot Subbasin, Blackfoot River** – confluence of Lanes and Diamond Creeks to Blackfoot Reservoir (unit US-10), and all tributaries thereof. Site-specific egg-ovary, whole-body, and muscle criterion elements for these water bodies are set out in the following table. The lentic and short-term exposure water column criterion elements set out in Subsection 210.01., table footnote r, are also applicable to the water bodies identified in this subsection.*

Chronic			
Egg-Ovary (mg/kg dw)	Fish Tissue (mg/kg dw)		Water Column (µg/L)
Egg-Ovary	Whole-Body	Muscle	Water Lotic
24.5 [1]	12.5 [2]	12.8 [2]	11.9 [3,4,5]
mg/kg dw – milligrams per kilogram dry weight, µg/L – micrograms per liter			

1. *Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species. Not to be exceeded; DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. Not to be exceeded; DEQ will evaluate all representative whole-body or muscle data to determine compliance with this criterion element.*

3. *Water column values are derived using the empirical BAF method. For comparative purposes only, the example value displayed in this table represents the lotic water column value for Sheep Creek based on the average BAF for Cutthroat Trout among all sampling locations and years.*

4. Lotic Water Column Equation=

$$\frac{Tissue_{criterion}}{BAF}$$

where Tissue criterion is the fish tissue element (whole-body), and BAF is the bioaccumulation factor derived by dividing site-specific field-collected samples of fish tissue (whole-body) by site-specific field-collected samples of water.

5. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, surface water from the fishless waters and fish tissue from the nearest downstream waters are used for bioaccumulation modeling. Fish tissue supersedes any site-specific water column values when fish are sampled downstream of fishless waters.

287.02 Subsection of Bear Lake Subbasin – Georgetown Creek – source to mouth (unit B-22), and all tributaries thereof. Site-specific egg ovary, whole-body, and muscle criterion elements for these water bodies are set out in the following table. The lentic and short-term water column criterion elements set out in Subsection 210.01., table footnote r, are also applicable to the water bodies identified in this subsection.

Chronic			
Egg-Ovary (mg/kg dw)	Fish Tissue (mg/kg dw)		Water Column (µg/L)
Egg-Ovary	Whole-Body	Muscle	Water Lotic
21.0 [1]	12.5 [2]	12.8 [2]	3.8 [3,4,5]
mg/kg dw – milligrams per kilogram dry weight, µg/L – micrograms per liter			

1. Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species. Not to be exceeded; DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.

2. Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. Not to be exceeded; DEQ will evaluate all representative whole-body and muscle data to determine compliance with this criterion element.

3. Water column values are derived using the empirical BAF method. For comparative purposes only, the example displayed in this table represents the

lotic water column value for Georgetown Creek, upstream of the intermittent reach, based on the average BAF for Brook Trout in all sampling locations and years.

4. *Lotic Water Column Equation =*

$$\frac{Tissue_{criterion}}{BAF}$$

where Tissue criterion is the fish tissue element (whole-body), and BAF is the bioaccumulation factor derived by dividing site-specific field-collected samples of fish tissue (whole-body) by site-specific field-collected samples of water.

5. *Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, surface water from the fishless waters and fish tissue from the nearest downstream waters are used for bioaccumulation modeling. Fish tissue supersedes any site-specific water column values when fish are sampled downstream of fishless waters.*

287.03 Subsection of Salt Subbasin – Sage Creek. *Sage Creek – source to mouth (unit US-9) including, Hoopes Spring channel downstream of the spring complex, South Fork Sage Creek downstream of the spring complex, Sage Creek downstream of the confluence of Hoopes Spring with Sage Creek to its confluence with Crow Creek, North Fork Sage Creek and tributaries (including Pole Canyon Creek). Site-specific egg-ovary and whole-body criterion elements for these water bodies are set out in the following table. The muscle, lentic water column, and short-term water column criterion elements set out in Subsection 210.01., table footnote r, are also applicable to the water bodies identified in this subsection.*

Chronic		
Egg-Ovary (mg/kg dw)	Fish Tissue (mg/kg dw)	Water Column (µg/L)
Egg-Ovary	Whole-Body	Water Lotic
20.5 [1]	13.6 [2]	16.7 [3]
mg/kg dw – milligrams per kilogram dry weight, µg/L – micrograms per liter		

1. *Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species. Not to be exceeded; DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish tissue supersedes water column element when both fish tissue (whole-body) and water concentrations are measured. Fish tissue elements are expressed as a single arithmetic average of tissue concentrations from at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. Not to be exceeded; DEQ will evaluate all representative whole-body data to determine compliance with this criterion element.*

3. *Water column values are derived using the empirical BAF method. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance.*

287.04 Subsection of Salt Subbasin Crow Creek *- Crow Creek - Downstream of Sage Creek confluence to Wyoming state line (US-8). Site-specific egg-ovary and whole-body criterion elements for these water bodies are set out in the following table. The muscle, lentic water column, and short-term water column criterion elements set out in Subsection 210.01., table footnote r, are also applicable to the water bodies identified in this subsection.*

Chronic		
Egg-Ovary (mg/kg dw)	Fish Tissue (mg/kg dw)	Water Column (ug/L)
Egg-Ovary	Whole-Body	Water Lotic
20.5 [1]	12.5 [2]	4.2 [3]
mg/kg dw – milligrams per kilogram dry weight, µg/L – micrograms per liter		

1. *Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species. Not to be exceeded; DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish tissue supersedes water column element when both fish tissue (whole-body) and water concentrations are measured. Fish tissue elements are expressed as a single arithmetic average of tissue concentrations from at least five (5) individuals*

3. *of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. Not to be exceeded; DEQ will evaluate all representative whole-body data to determine compliance with this criterion element.*

4. *Water column values are derived using the empirical BAF method. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance.*

287.05 Portions of Idaho.

a. This site-specific criterion applies in the HUC subbasins set out in the following table.

HUC	Subbasin		HUC	Subbasin
16010102	Central Bear		17040208	Portneuf
16010201	Bear Lake		17040209	Lake Walcott
16010202	Middle Bear		17040210	Raft
16010203	Little Bear-Logan		17040211	Goose
16010204	Lower Bear-Malad		17040214	Beaver-Camas
16020309	Curlew Valley		17040215	Medicine Lodge
17010302	South Fork Coeur d		17040216	Birch
17010306	Hangman		17040218	Big Lost
17010308	Little Spokane		17040220	Camas
17040104	Palisades		17040221	Little Wood
17040105	Salt		17050104	Upper Owyhee
17040201	Idaho Falls		17050105	South Fork Owyhee
17040202	Upper Henrys		17050106	East Little Owyhee
17040203	Lower Henrys		17050107	Middle Owyhee
17040204	Teton		17050108	Jordan
17040205	Willow		17060109	Rock
17040206	American Falls			
17040207	Blackfoot			

b. Site-specific egg-ovary, whole-body, and muscle criterion elements for the water bodies identified in Subsection 287.05.a. are set out in the following table. The water column criterion elements set out in Subsection 210.01., table footnote r, are also applicable to the water bodies identified in Subsection 287.05.a.

Chronic		
Egg-Ovary (mg/kg dw)	Fish Tissue (mg/kg dw)	
Egg-Ovary	Whole-Body	Muscle
19.0[1]	9.5[2]	13.1[2]
mg/kg dw – milligrams per kilogram dry weight, µg/L – micrograms per liter		

1. *Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species. Not to be exceeded; DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. Not to be exceeded; DEQ will evaluate all representative whole-body or muscle data to determine compliance with this criterion element.*

B. The EPA Approval of Idaho's New and Revised Selenium Aquatic Life Water Quality Criterion at IDAPA 58.01.02.210.01

The EPA Action

In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves Idaho's revised chronic selenium criterion at IDAPA 58.01.02.210.01, which includes specific parts of footnote r to the revised chronic selenium criterion.

Idaho's selenium criterion at footnote r includes the following magnitude components:

- Fish egg/ovary magnitude value of 15.1 milligrams per kilogram, based on dry weight, (mg/kg dw).
- Fish whole body magnitude value of 8.5 mg/kg dw.
- Fish muscle magnitude value of 11.3 mg/kg dw.
- Water column magnitude value of 1.5 micrograms per liter (µg/L) in lentic aquatic systems.
- Water column magnitude values of 3.1 µg/L in lotic aquatic systems.
- Water column intermittent exposure magnitude equation:

$$\frac{WQC - C_{bkgrnd}(1 - f_{int})}{f_{int}}$$

where WQC is the water column element, for either lentic or lotic waters; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value $\geq$ 0.033 (corresponding to one day).

The EPA approves the following parts of #1, #2 and #3 to footnote r which includes the recognition that the fish tissue elements supersede the water elements (except in specific situations as noted in #3 and #4 to footnote r) and specifies the frequency component for the fish tissue elements. The duration component of the fish tissue criterion although not specified is assumed to be instantaneous. In addition, the EPA approves the entirety of #4 to footnote r which specifies the equation for the intermittent water column criterion magnitude and duration components.

1. Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Not to be exceeded;

2. Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Not to be exceeded;

3. Water column values are based on dissolved total selenium in water and are derived from fish tissue values via bioaccumulation modeling. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data.

4. Intermittent Exposure Equation=

$$\frac{WQC - C_{bkgrnd}(1 - f_{int})}{f_{int}}$$

where WQC is the water column element, for either lentic or lotic waters; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to one day).

Footnote f specifies that Idaho's chronic selenium criterion be expressed as total recoverable, however #3 to new footnote r states that water column values are based on dissolved total selenium. Idaho explained that retaining footnote f to selenium was an error and notified EPA that the correction was made in December 2018.[10]

As discussed in detail in Section IV below, the EPA is not acting on specific parts of #1, #2, and #3 to footnote r, and the entirety of footnote s, because the EPA does not consider these to be water quality standards subject to EPA review and action under CWA Section 303(c).

The EPA Rationale

The EPA's WQS regulations at 40 CFR § 131.11 require states to adopt water quality criteria that protect the designated use and that such criteria be based on sound scientific rationale. In establishing numeric criteria for toxic pollutants, states should establish numerical values based on (1) 304(a) guidance; or (2) 304(a) guidance modified to reflect site-specific conditions; or (3) other scientifically defensible methods. In addition, consistent with the EPA's methodology for criteria protective of aquatic life, criteria must include a magnitude, frequency and duration component, each of which are to be based on a sound scientific rationale.

Idaho's revised selenium criterion is comprised of four elements and as stated in #1 and #2 to footnote r, the whole-body or muscle elements supersede the water column element, and the egg-ovary element supersedes any other element. Adoption of the fish whole-body or muscle tissue

[10] Email dated December 4, 2018 from Jason Pappani, Idaho Department of Environmental Quality to Lisa Macchio, Region 10, U.S. Environmental Protection Agency. Subject: non-substantive correction – water quality standards 58.01.02-footnote d has been deleted.

element into water quality standards ensures the protection of aquatic life when measurements from fish eggs or ovaries are not available, and adoption of the water column element ensures protection when steady-state fish tissue measurements are not available. All four criterion elements applied together protect Idaho's aquatic life designated uses from the chronic effects of exposure to total selenium in waters inhabited by fish as well as in fishless waters.

Idaho's revised selenium criterion at IDAPA 58.01.02.210.01 and contained in footnote r to the selenium criterion in the table of numeric criteria for toxic substances, includes the magnitude components (egg/ovary value of 15.1 mg/kg dw, whole body value of 8.5 mg/kg dw, muscle value of 11.3 mg/kg dw) for Idaho's tissue criterion element consistent with the EPA's 304(a) national recommendation. Additionally, the frequency component for Idaho's lentic, lotic and short term intermittent water column selenium criterion element at IDAPA 58.01.02.210.03.d.i. of not more than once in three years is consistent with the EPA's 304(a) national recommendation.

The EPA's 304(a) national recommendation provides an extensive technical basis and justification as to how the recommended aquatic life criterion adequately protects aquatic life uses.[11] The criterion document provides an assessment and critical review of all data identified in the EPA's literature search quantifying the toxicity of selenium to freshwater aquatic organisms, and provides a basis for a criterion that will assure protection of populations of fish, amphibians, aquatic invertebrates and plants, based on available data. The EPA is relying upon the justification for the 304(a) national recommendations as well as the discussion in Idaho's submittal to provide the basis for the EPA's approval of Idaho's new and revised selenium aquatic life criterion. A more detailed discussion of each WQS component is provided below.

Frequency Component for Fish Tissue Criteria

Frequency is the number of times an excursion of the criterion can occur over time without impairing the aquatic community or other use. The frequency component for the fish tissue selenium aquatic life criterion elements are different from the frequency for the water column criterion elements. The current recommendation for return frequency of once in three years on average is based on the ability of an aquatic ecosystem to recover from a toxic insult when pollutant impacts are associated exclusively with a water column exposure.[12] The frequency component of the fish tissue criterion elements of the selenium criterion differs from the typical "once-in-three years on average" frequency of water column criteria. Selenium is a bioaccumulative pollutant; therefore, elevated levels in various ecological compartments (e.g., biota, surficial sediments) require a long period to decrease, and the associated aquatic community requires a long time to recover following reduction or removal of an elevated selenium exposure to a given system. As selenium is bioaccumulative and the pathway for exposure is through the food web, the typical criteria return frequency is not appropriate for selenium in fish tissue as this could lead to sustained ecological impacts. As fish tissue has a much longer recovery time than water column concentrations, a frequency of "not to exceed" is appropriate for the tissue criterion element.

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[11] USEPA (U.S. Environmental Protection Agency). 2016. *Aquatic Life Ambient Water Quality Criterion for Selenium–Freshwater 2016.* EPA 822-R-16-006. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

[12] USEPA (U.S. Environmental Protection Agency). 2010. Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. EPA PB85-227049. U.S. Environmental Protection Agency.

Idaho specifies a frequency of "not to exceed" for the selenium fish tissue criterion element at IDAPA 58.01.02.210.01, #1 and #2 to footnote r to the selenium criterion which is consistent with the EPA's 304(a) national recommendation.

Duration Component for Fish Tissue Criteria

The duration component of criteria describes the averaging period and restricts the length of time that the concentration in the receiving water can be continuously above a criterion concentration, in order to protect aquatic life. A numerical value for the fish tissue criterion elements averaging period, or duration, is specified as instantaneous because fish tissue data provide point measurements that reflect integrative accumulation of selenium over time and space in the fish populations(s) at a given site. Selenium concentrations in fish tissue are generally expected to only change gradually over time in response to environmental fluctuations; thus, there would be relatively little difference in tissue concentrations with different averaging period durations if the average selenium concentrations in water are relatively stable over time. Therefore, a tissue criterion measurement is considered instantaneous.

The duration component for Idaho's fish tissue criterion elements is not specified, but because it is tissue based, it is implied that it is instantaneous.

Frequency Component for Water Column Criteria

The current recommendation for return frequency of not more than once in three years on average is based on the ability of an aquatic ecosystem to recover from a toxic insult when pollutant impacts are associated exclusively with a water column exposure.[13] The frequency component for the monthly average water column criterion for selenium is a concentration value not to be exceeded more than once in three years on average; consistent with the EPA's current recommendation in the 1985 Guidelines for water column criteria.

The frequency component for Idaho's water column criterion concentration for lentic (1.5 µg/L) and lotic waters (3.1 µg/L) is specified at IDAPA 58.01.02.210.03.d.i. as not more than once in three years which is consistent with the EPA's 304(a) national recommendation.

Duration Component for Water Column Criteria

The EPA provides a detailed analysis for the derivation of a 30-day averaging period for the chronic water criterion elements in the 304(a) national recommendation for selenium. This differs from typical criteria averaging periods based on the EPA's 1985 Guidelines, where the basis for the criterion averaging period is a time period less than or equal to the "characteristic time," which describes the toxic speed of action due to direct waterborne toxicity of metals. The derivation of the averaging period for the selenium water column concentration was based on the kinetics of bioaccumulation and depuration rates for different trophic levels. The EPA provides an analysis of the protectiveness of a 30-day averaging period in Appendix J to the 304(a) national recommendation for selenium.

Idaho specifies a duration component of a 30-day average concentration for the water column selenium criterion element for lentic and lotic waters at IDAPA 58.01.02.210.01, footnote r to the selenium criterion which is consistent with the EPA's 304(a) national recommendation.

[13] IBID

Intermittent Water Column Equation
The EPA's 304(a) national recommendation for selenium includes an intermittent exposure water column criterion element to address situations where pulsed exposures of selenium could result in bioaccumulation in the ecosystem and is intended to limit cumulative exposure to selenium and potential chronic effects in fish. This is derived from the chronic 30-day water criterion element magnitude and duration. The intermittent criterion element is based on the same kinetic analysis used to derive the 30-day averaging period.

Idaho's intermittent water column criterion equation is provided at IDAPA 58.01.02.201.01, #4 to footnote r to the selenium criterion, and is consistent with the EPA's 304(a) national recommendation.

The frequency component for Idaho's intermittent water column criterion is specified at IDAPA 58.01.02.210.03.d.i. as not more than once in three years and is consistent with the EPA's 304(a) national recommendation.

C. The EPA Approval of Revised WQS Regarding Frequency and Duration for Aquatic Life Criteria at IDAPA 58.01.02.210.03.d.i.

The EPA Action
In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves the addition of new language (in underlined text below) to IDAPA 58.01.02.210.03.d.i. This additional language allows for frequency and duration components for aquatic life criteria to be specified in an alternative manner from the frequency and duration set forth in the same provision.

IDAPA 58.01.02.210.03.d.i. Application of toxics criteria

> *Frequency and duration for aquatic life toxics criteria. Column B1 criteria are concentrations not to be exceeded for a one-hour average more than once in three (3) years unless otherwise specified. Column B2 criteria are concentrations not to be exceeded for a four-day average more than once in three (3) years unless otherwise specified.*

The EPA Rationale
Idaho includes clarifying language to IDAPA 58.01.02.210.03.d.i, the general provision specifying the frequency and duration for aquatic life criteria, such that for any specific pollutant, an alternative frequency and duration component could be applicable. The revised language renders Idaho's duration and frequency components of its new chronic selenium criterion at footnote r, applicable. This provides for frequency and duration components consistent with the EPA's 304(a) national recommendation for selenium.

D. The EPA Approval of the Deletion of the Acute Aquatic Life Selenium Criterion at IDAPA 58.01.02.210.01

The EPA Action
In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves the deletion of Idaho's acute criterion for selenium of 20 µg/L at IDAPA 58.01.02.210.01 along with deletion of footnote f as applicable to the acute value.

The EPA Rationale
As discussed in the EPA's 304(a) national recommendation for selenium, although selenium may cause acute toxicity at high concentrations, the most deleterious effect on aquatic organisms is due to its bioaccumulative properties; these chronic effects are found at lower concentrations than acute effects. Organisms in aquatic environments exposed to selenium accumulate it primarily through their diets, and not directly through water. The best science indicates that selenium toxicity occurs primarily through transfer to the eggs and subsequent reproductive effects. Because selenium is bioaccumulative and toxicity primarily occurs through dietary exposure, the EPA's national recommended chronic criterion is expected to be protective of acute effects.

Idaho adopted a chronic criterion consistent with the EPA's 304(a) national recommendation, which does not include a separate acute criterion recommendation. For this reason, the EPA has determined that aquatic communities in Idaho waters, and thus Idaho's aquatic life designated uses, will be protected by Idaho's chronic criterion for selenium from any potential acute effects of selenium. Therefore, Idaho's deletion of the acute criterion along with footnote "f" to the acute criterion is appropriate since Idaho's chronic criterion will provide the necessary protection to aquatic organisms from acute and chronic selenium toxicity.

E. The EPA Approval of Idaho's New Site-Specific Selenium Aquatic Life Water Quality Criteria

1. The EPA Approval of Idaho's New Site-Specific Selenium Aquatic Life Water Column Criterion Provision at IDAPA 58.01.02.287 and Use of the Performance-Based Approach

The EPA Action
In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves IDAPA 58.01.02.287. The EPA has determined that IDAPA 58.01.02.287 is consistent with 40 CFR § 131.11 and the EPA's 304(a) national recommendation for selenium, is based on sound science, and will protect Idaho's designated aquatic life uses.

The following is the rule language the EPA approves at IDAPA 58.01.02.287:

> *287. Site-specific water column values (30-day average) are based on dissolved total selenium in water and are derived using a performance-based approach from fish tissue values via either the mechanistic modeling or empirical bioaccumulation factor (BAF) method in Aquatic Life Ambient Water Quality Criterion for Selenium - Freshwater, EPA-822-R-16-006, Appendix K: Translation of a Selenium Fish Tissue Criterion Element to a Site-Specific Water Column Value.*

The EPA Rationale
Idaho specifies at IDAPA 58.01.02.287 that site-specific water column criteria elements are based on a 30-day average and are expressed as dissolved total selenium. Additionally, IDAPA 58.01.02.287 specifies the use of Appendix K of the EPA's 304(a) national recommendation as the translation procedure for deriving the site-specific water column criterion elements.

As described in Section II.D., above, the EPA's 304(a) national recommendation for selenium includes the option for states and tribes to use translation procedures for deriving site-specific water column criteria for selenium. Idaho's rule language providing for the use of Appendix K as a performance-based approach to derive site-specific water column criteria elements – in conjunction with the state's upcoming implementation guidance document, which will provide additional clarity, including appropriate protection of invertebrates – is protective and based on sound science.[14] The EPA's approval of this approach serves as approval of future site-specific water column translations as well.

2. The EPA Approval of Idaho's New Site-Specific Selenium Aquatic Life Criterion at IDAPA 58.01.02.287.01, Subsection of the Blackfoot Subbasin – Blackfoot River

The EPA Action
In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves Idaho's site-specific chronic selenium criterion at IDAPA 58.01.02.287.01 and the lentic and intermittent (short term) exposure water column criterion elements at IDAPA 58.01.02.210.01 table, footnote r, as applicable to the waters identified at IDAPA 58.01.02.287.01.
In addition, the EPA approves those parts of footnotes #1, #2, #3 identified below and the entirety of footnotes #4 and #5 to the criterion values in the table at IDAPA 58.01.02.287.01.

The EPA approves the following site-specific magnitude components applicable to these waters:

- Fish egg/ovary magnitude value of 24.5 mg/kg dw.
- Fish whole body magnitude value of 12.5 mg/kg dw.
- Fish muscle magnitude value of 12.8 mg/kg dw.
- Water column magnitude value of 1.5 µg/L in lentic aquatic systems established at IDAPA 58.01.02.210.01 table, footnote r.
- Water column magnitude values of 3.1 µg/L in lotic aquatic systems at this time and until alternate water column criteria for lotic waters are derived from the translation of sufficient site-specific tissue data using the BAF method specified in Appendix K.
- Water column intermittent exposure magnitude equation established at IDAPA 58.01.02.210.01 table, footnote r:

[14] WQS Handbook Chapter 3 as well as FR Vol 65 Number 82 pages 24641-24653

$$\frac{WQC - C_{bkgrnd}(1 - f_{int})}{f_{int}}$$

where WQC is the water column element, for either lentic or lotic waters; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to one day).

The EPA approves the following parts of footnotes #1, #2, #3, and the entirety of footnotes #4 and #5 to the criterion values in the table at IDAPA 58.01.02.287.01, which include the recognition that the fish tissue elements supersede the water elements and specify the frequency component, not to be exceeded, for the fish tissue criterion elements. The duration component of the fish tissue criterion, although not specified, is assumed to be instantaneous.

1. Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Not to be exceeded;

2. Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Not to be exceeded;

3. Water column values are derived using the empirical BAF method.

4. Lotic Water Column Equation =

$$\frac{Tissue_{criterion}}{BAF}$$

Where Tissue criterion is the fish tissue element (whole-body), and BAF is the bioaccumulation factor derived by dividing site-specific field collected samples of fish tissue (whole-body) by site-specific field collected samples of water.

5. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, surface water from the fishless waters and fish tissue from the nearest downstream waters are used for bioaccumulation modeling. Fish tissue supersedes any site-specific water column values when fish are sampled downstream of fishless waters.

As discussed in detail in Section IV below, the EPA is not acting on specific parts of footnotes #1, #2, and #3 because the EPA does not consider these water quality standards subject to the EPA review and action under CWA Section 303(c).

The EPA Rationale

Idaho derived the site-specific criterion fish-tissue elements using the most sensitive species

approach. The most sensitive species approach is based on deriving a criterion that is protective of the most sensitive species that resides at the site while ensuring protection of all other resident species. The most sensitive resident species approach is appropriate for this site because this watershed supports a naturally limited fish assemblage and Idaho is confident that they know all the species that are present in these waters due to extensive monitoring. In addition, the resident species of these site waters differ in both the assemblage and their sensitivity relative to those species used to develop the national recommended criterion.

Based on the EPA's review of DEQ's technical support documents which include fish survey results, the information demonstrates rainbow trout is the most sensitive resident species for the tissue elements (egg ovary, whole body and muscle) in the Upper Blackfoot River and all tributaries.[15, 16] The egg-ovary site-specific tissue value is the species mean chronic value for rainbow trout data from the EPA's 304(a) national recommendation. The whole-body site-specific tissue value is derived by converting the rainbow trout egg-ovary value using a conversion factor of 1.96 for the rainbow trout genus. The muscle tissue value is derived using a conversion factor calculated from a median of the rainbow trout data from the EPA's 304(a) national recommendation.[17, 18]

Although the approach using the most sensitive species at the site deviates from the EPA's recalculation procedure guidance,[19, 20] the EPA reviewed DEQ's detailed rationale and technical justification for this approach and the derivation of the fish tissue elements contained in the support documents [21, 22] and has determined that the derivation of tissue elements for this site-specific criterion is based on a sound scientific rationale. In addition, the EPA has determined that the use of the species mean chronic value for rainbow trout from the EPA's 304(a) national recommendation to derive the tissue elements for this site is based on sound science and provides protection to resident species at the site. Based on the review of DEQ's technical support documents, the EPA has determined that the use of rainbow trout as the most sensitive resident species at the site to derive tissue elements for this site provides protection to all resident species at the site.

The table contained at IDAPA 58.01.02.287.01 provides a lotic water column value of 11.9 µg/L;

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[15] Arcadis. 2017. Nu-West Industries, Inc., *Proposal for Site-Specific Selenium Criteria, Upper Blackfoot River and Georgetown Creek Watersheds.* November 2017

[16] State of Idaho Department of Environmental Quality. 2018. *Idaho Aquatic Life Criteria for Selenium – Supplemental Technical Justification*, Docket 58-0102-1701. June 2018

[17] Arcadis. 2017. Nu-West Industries, Inc., *Proposal for Site-Specific Selenium Criteria, Upper Blackfoot River and Georgetown Creek Watersheds.* November 2017

[18] State of Idaho Department of Environmental Quality. 2018. *Idaho Aquatic Life Criteria for Selenium – Supplemental Technical Justification*, Docket 58-0102-1701. June 2018

[19] EPA. 1985. *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. PB85-227049. US Environmental Protection Agency, Office of Research and Development.

[20] EPA. 2013. *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic life Criteria,* EPA-823-R-13-001. U.S. Environmental Protection Agency, Office of Science and Technology.

[21] Arcadis. 2017. Nu-West Industries, Inc., *Proposal for Site-Specific Selenium Criteria, Upper Blackfoot River and Georgetown Creek Watersheds.* November 2017

[22] State of Idaho Department of Environmental Quality. 2018. *Idaho Aquatic Life Criteria for Selenium – Supplemental Technical Justification*, Docket 58-0102-1701. June 2018

however, as provided in footnote 3, the value is for comparative purposes only. Until a site-specific value is derived, the applicable lotic water column value is the statewide value (3.1 µg/L) specified at IDAPA 58.01.02.210.01 footnote r.

Because the necessary site-specific bioaccumulation information to derive a lotic water column element using the empirical BAF approach is currently lacking, Idaho adopted a performance-based approach to use when sufficient paired water column and fish tissue data are available to derive a site-specific water column value for these lotic waters. Thus, as provided at IDAPA 58.01.02.287, a site-specific water column criterion for these lotic waters may be derived using a performance-based approach following methods described in Appendix K of the EPA's 304(a) national recommendation. As discussed previously in Section III.E.1 of this document, use of

Appendix K as a performance-based approach to derive site-specific criteria is consistent with the EPA's 304(a) national recommendation for selenium. In addition, because sufficient information is not available the develop site-specific lentic and intermittent water column values, the lentic and intermittent water column values applicable to the Blackfoot River (US-10) are the statewide values specified at IDAPA 58.01.02.210.01 footnote r.

With respect to the derivation of site-specific selenium criteria for fishless waters in this watershed, DEQ's letter on July 9, 2019 [23] to the EPA affirms DEQ's commitment to develop guidance for the implementation of the selenium criteria, and specifically will include implementation of the fishless water translator to ensure that any site-specific water column criterion derived using downstream fish and upstream water will also be protective of the in-stream community of invertebrates in any fishless water. Because of uncertainties associated with the BAF approach, the EPA does not recommend developing BAFs from data extrapolated from different sites or across large spatial scales. The preferred approach for using a BAF to implement the selenium fish tissue criterion is to calculate a site-specific, field-measured BAF from data gathered at the site of interest, and to apply that BAF to that site. However, if DEQ utilizes a BAF approach to fishless waters, assuring protection of aquatic life in these waters may need to include adjusting the water column values if potential issues are indicated by invertebrate monitoring.

Additionally, fish collection should occur in a location and time most representative of exposure to the fishless water (e.g., stream) effluent in order to quantify bioaccumulation rates that are relevant to selenium emitted from the fishless water in question. If fish are sampled downstream of the fishless water, it is possible that their selenium concentrations will be affected by selenium exposures outside of the fishless water's influence such that a derived BAF is not reflective (e.g., artificially low) of processes related to that fishless water.

Based on the EPA's review of DEQ's technical support document and DEQ's July 9, 2019 letter, the EPA has determined that the site-specific tissue elements and the water column elements for the Blackfoot River from the confluence of Lanes and Diamond Creeks to Blackfoot Reservoir and all tributaries to this portion of the Blackfoot River (referred to in Idaho's WQS at IDAPA 58.01.02.150.09 as unit US-10), including parts of footnotes #1, #2, #3 and the entirety of

[23] Letter dated July 9, 2019 from Mary Anne Nelson, Administrator, Water Division, Idaho Department of Environmental Quality, to Dan Opalski, Director, Water Division, Region 10, U.S. Environmental Protection Agency, Subject: Application of "Fishless Water Translator: to Derive Selenium Criteria for Aquatic Life in Fishless Waters; DEQ Rulemaking Docket No. 58-0102-1701.

footnotes #4 and #5 are based on sound science and will protect Idaho's aquatic life designated uses of cold water and salmonid spawning in these waters.

3. The EPA Approval of Idaho's New Site-Specific Selenium Aquatic Life Criterion at IDAPA 58.01.02.287.02, Subsection of the Bear Lake Subbasin – Georgetown Creek

The EPA Action

In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves Idaho's site-specific chronic selenium criterion at IDAPA 58.01.02.287.02 and the lentic and intermittent (short term) exposure water column criterion elements at IDAPA 58.01.02.210.01 table, footnote r, as applicable to the waters identified at IDAPA 58.01.02.287.02. The EPA approves the following site-specific criterion magnitude components applicable to these waters:

- Fish egg/ovary magnitude value of 21.1 mg/kg dw.
- Fish whole body magnitude value of 12.5 mg/kg dw.
- Fish muscle magnitude value of 12.8 mg/kg dw.
- Water column magnitude value of 1.5 µg/L in lentic aquatic systems established at IDAPA 58.01.02.210.01 table, footnote r.
- Water column magnitude values of 3.1 µg/L in lotic aquatic systems at this time and until alternate water column criteria for lotic waters are derived from the translation of sufficient site-specific tissue data using the BAF method specified in Appendix K.
- Water column intermittent exposure magnitude equation established at IDAPA 58.01.02.210.01 table, footnote r:

$$\frac{WQC - C_{bkgrnd}(1 - f_{int})}{f_{int}}$$

where WQC is the water column element, for either lentic or lotic waters; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to one day).

Lastly, the EPA approves the following parts of footnotes #1, #2, #3, and the entirety of footnotes #4 and #5 to the criterion values in the table provided at IDAPA 58.01.02.287.02, which includes the recognition that the fish tissue elements supersede the water elements and specifies the frequency component not to be exceeded for the fish tissue elements. The duration component of the fish tissue criterion, although not specified, is assumed to be instantaneous.

1. Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Not to be exceeded;

2. Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Not to be exceeded;

3. Water column values are derived using the empirical BAF method.

4. Lotic Water Column Equation =

$$\frac{Tissue_{criterion}}{BAF}$$

Where Tissue criterion is the fish tissue element (whole-body), and BAF is the bioaccumulation factor derived by dividing site-specific field collected samples of fish tissue (whole-body) by site-specific field collected samples of water.

5. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, surface water from the fishless waters and fish tissue from the nearest downstream waters are used for bioaccumulation modeling. Fish tissue supersedes any site-specific water column values when fish are sampled downstream of fishless waters.

As discussed in detail in Section IV below, the EPA is not acting on specific parts of footnotes #1, #2, and #3 because the EPA does not consider these water quality standards subject to the EPA review and action under CWA Section 303(c).

The EPA Rationale

Idaho derived the site-specific fish-tissue criterion elements using the most sensitive species approach. The most sensitive species approach is based on deriving a criterion that is protective of the most sensitive species that resides at the site while ensuring protection of all other resident species. The most sensitive resident species approach is appropriate for this site because Georgetown Creek supports a naturally limited fish assemblage (fish are the most sensitive taxa to selenium) and Idaho is confident that they know all the species that are present in these waters due to extensive monitoring. In addition, the resident species of these site waters differ in both the assemblage and their sensitivity relative to those used by the EPA to develop the EPA national recommendation for selenium. DEQ's technical support documents include information such as fish survey results which demonstrates that brown trout is the most sensitive species for the egg ovary tissue element and rainbow trout is the most sensitive species for the whole body and muscle tissue elements in Georgetown Creek.[24, 25] Based on the review of DEQ's technical support documents, the EPA has determined that the use of the most sensitive resident species at

[24] Arcadis. 2017. Nu-West Industries, Inc., *Proposal for Site-Specific Selenium Criteria, Upper Blackfoot River and Georgetown Creek Watersheds.* November 2017

[25] State of Idaho Department of Environmental Quality. 2018. *Idaho Aquatic Life Criteria for Selenium – Supplemental Technical Justification*, Docket 58-0102-1701. June 2018

the site to derive tissue elements for these waters provides protection to all resident species.

The egg ovary site-specific tissue value is derived using the EC10 for brown trout from the EPA's 304(a) national recommendation. The whole body and muscle tissue values are also derived using the EC10 for rainbow trout from the EPA's 304(a) recommendation. Utilizing different species to derive each tissue element based on the most sensitive resident species is supported by the information DEQ provided in the technical support documents and consistent with the EPA guidance.[26, 27]

Although the approach using the most sensitive species at the site deviates from the EPA's recalculation procedure guidance,[28, 29] the EPA reviewed DEQ's detailed rationale and technical justification for this approach and has determined the derivation of tissue elements is based on sound scientific rationale and will be protective of Idaho's designated aquatic life uses of cold water and salmonid spawning in Georgetown Creek.[30,31]

The table in the rule provides a lotic water column value of 3.8 µg/L, however footnote 3 specifies that this value is an example value for comparative purposes only. As explained during DEQ's rulemaking, because sufficient data to derive a site-specific lotic water column element are currently unavailable, a performance-based approach is included (at IDAPA 58.01.02.287) to provide DEQ the ability to derive a site-specific lotic water column element in the future. Therefore, until a site-specific value is derived, the applicable lotic water column value for Georgetown Creek is the statewide value of 3.1 µg/L as specified in in IDAPA 58.01.02.210.01 footnote r. When sufficient paired fish tissue data and water column data from the site is available DEQ will employ the empirical BAF method specified in Appendix K of the EPA's 304(a) national recommendation. As discussed previously in Section III.E.1 of this document, use of Appendix K as a performance-based approach to derive site-specific criteria is consistent with the EPA's 304(a) national recommendation for selenium. In addition, the lentic and intermittent water column value applicable to Georgetown Creek (B-22) are specified in IDAPA 58.01.02.210.01 footnote r.

With respect to the derivation of site-specific selenium criterion for fishless waters in this watershed, DEQ's letter on July 9, 2019 [32] to the EPA affirms DEQ's commitment to develop

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[26] EPA. 1985. *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. PB85-227049. US Environmental Protection Agency, Office of Research and Development.

[27] EPA. 2013. *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic life Criteria,* EPA-823-R-13-001. U.S. Environmental Protection Agency, Office of Science and Technology.

[28] EPA. 1985. *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. PB85-227049. US Environmental Protection Agency, Office of Research and Development.

[29] EPA. 2013. *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic life Criteria,* EPA-823-R-13-001. U.S. Environmental Protection Agency, Office of Science and Technology.

[30] Arcadis. 2017. Nu-West Industries, Inc., *Proposal for Site-Specific Selenium Criteria, Upper Blackfoot River and Georgetown Creek Watersheds.* November 2017

[31] State of Idaho Department of Environmental Quality. 2018. *Idaho Aquatic Life Criteria for Selenium – Supplemental Technical Justification*, Docket 58-0102-1701. June 2018

[32] Letter dated July 9, 2019 from Mary Anne Nelson, Administrator, Water Division, Idaho Department of

guidance for the implementation of the selenium criteria, and specifically will include implementation of the fishless water translator to ensure that any site-specific water column criterion derived using downstream fish and upstream water will also be protective of the in-stream community of invertebrates in any fishless water. Because of uncertainties associated with the BAF approach, the EPA does not recommend developing BAFs from data extrapolated from different sites or across large spatial scales. The preferred approach for using a BAF to implement the selenium fish tissue criterion is to calculate a site-specific, field-measured BAF from data gathered at the site of interest, and to apply that BAF to that site. However, if DEQ utilizes a BAF approach to fishless waters, assuring protection of aquatic life in these waters may need to include adjusting water column values if potential issues are indicated by invertebrate monitoring.

Additionally, fish collection should occur in a location and time most representative of exposure to fishless water (e.g., a stream) effluent in order to quantify bioaccumulation rates that are relevant to selenium emitted from the fishless water in question. If fish are sampled downstream of the fishless water, it is possible that their selenium concentrations will be affected by selenium exposures outside of the fishless water's influence such that a derived BAF is not reflective (e.g., artificially low) of processes related to that fishless water.

Based on the EPA's review of DEQ's technical support documents, and DEQ's July 9, 2019 letter, the EPA has determined that the site-specific tissue criterion elements and the water column elements for Georgetown Creek, (referred to in Idaho's WQS at IDAPA 58.01.02.160.02 as unit B-22) including parts of footnotes #1, #2, #3, and the entirety of footnotes #4 and #5 to the criterion values in the table provided at IDAPA 58.01.02.287.02, are based on sound science, and will protect Idaho's aquatic life designated uses of cold water and salmonid spawning in these waters.

4. The EPA Approval of Idaho's New Site-Specific Selenium Aquatic Life Criterion at IDAPA 58.01.02.287.03, Salt Subbasin – For Sage Creek described as source to mouth including Hoopes Spring channel downstream of the spring complex, Sage Creek downstream of the confluence of Hoopes Spring with Sage Creek to its confluence with Crow Creek.

The EPA Action

In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves the site-specific criterion at IDAPA 58.01.02.287.03, and the application of the fish muscle criterion element, lentic and intermittent (short term) exposure water column criterion elements at IDAPA 58.01.02.210.01 table footnote r for Sage Creek, source to mouth including Hoopes Spring channel downstream of the spring complex, Sage Creek downstream of the confluence of Hoopes Spring with Sage Creek to its confluence with Crow Creek.

As discussed in Section III.F. below, the EPA disapproves the application of the site-specific criteria at IDAPA 58.01.02.287.03 for North Fork Sage Creek and all its tributaries, and Pole

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Environmental Quality, to Dan Opalski, Director, Water Division, Region 10, U.S. Environmental Protection Agency, Subject: Application of "Fishless Water Translator: to Derive Selenium Criteria for Aquatic Life in Fishless Waters; DEQ Rulemaking Docket No. 58-0102-1701.

Canyon Creek and all its tributaries.

The EPA approves the following site-specific criterion magnitude components applicable to these waters:

- Fish egg/ovary magnitude value of 20.5 mg/kg dw.
- Fish whole body magnitude value of 13.6 mg/kg dw.
- Fish muscle magnitude value of 11.3 mg/kg dw established at IDAPA 58.01.02. 210.01 table, footnote r.
- Water column magnitude value of 16.7 µg/L in lotic aquatic systems.
- Water column magnitude value of 1.5 µg/L in lentic aquatic systems established at IDAPA 58.01.02.210.01 table, footnote r.
- Water column intermittent exposure magnitude equation established at IDAPA 58.01.02.210.01 table, footnote r:

$$\frac{WQC - C_{bkgrnd}(1 - f_{int})}{f_{int}}$$

where WQC is the water column element, for either lentic or lotic waters; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to one day).

In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 § CFR 131.11, the EPA approves the following parts of footnotes #1, #2, and #3 to the criterion values in the table provided at IDAPA 58.01.02.287.03:

> *1. Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Not to be exceeded;*
>
> *2. Fish tissue supersedes water column element when both fish tissue (whole-body) and water concentrations are measured. Not to be exceeded;*
>
> *3. Water column values are derived using the empirical BAF method. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data.*

These footnotes specify the fish tissue elements supersede the water elements and the frequency component is a not to exceed for the fish tissue elements. The duration component of the fish tissue criterion, although not specified, is assumed to be instantaneous.

The EPA Rationale

Idaho's new selenium site-specific criterion at IDAPA 58.01.02.287.03 is applicable to Sage Creek, from its source to mouth including Hoopes Spring channel downstream of the spring complex, South Fork Sage Creek downstream of the spring complex, Sage Creek downstream of the confluence of Hoopes Spring with Sage Creek to its confluence with Crow Creek (referred to from here on as "Sage Creek").

For reasons discussed in Section III.F. below, the EPA is disapproving this site-specific criterion for North Fork Sage and its tributaries, and Pole Canyon Creek and its tributaries.

Idaho derived the site-specific selenium fish tissue elements using the most sensitive species approach. The most sensitive species approach is based on deriving a criterion that is protective of the most sensitive species that resides at the site while ensuring protection of all other resident species. The most sensitive resident species approach is appropriate for this site because these waters support a naturally limited fish assemblage (fish are the taxa most sensitive to selenium) and Idaho is confident all species at the sites have been identified through extensive monitoring. In addition, the resident species of these site waters differ in both the assemblage of species and their sensitivity relative to those used to develop the EPA's 304(a) national recommendation for selenium. As discussed in Idaho's technical support documents, the information and data available demonstrate that brown trout is the most sensitive resident species for the egg-ovary and whole-body tissue elements in Sage Creek.[33, 34]

The egg-ovary value was derived using Simplot's brown trout dataset.[35] The whole-body value was derived by converting the egg-ovary value to a whole-body value using a conversion factor of 1.46. This conversion factor was calculated from the median of the ratios of brown trout egg concentrations and brown trout whole-body concentrations from Simplot's dataset. This dataset is the same dataset used in EPA's 304(a) recommendation, except that Simplot has a few additional data points for this site-specific criterion. This methodology resulted in a whole-body value of 14.0 mg/kg dw. In the 304(a) recommendation, the EPA calculated a whole-body value of 13.2 mg/kg dw for brown trout from a direct measurement of the highest no observed effect concentration for whole-body concentrations. The adopted whole-body criterion element for this site-specific criterion of 13.6 mg/kg dw is the geometric mean of these two values (14.0 mg/kg dw and 13.2 mg/kg dw), as discussed in the additional information provided by Simplot as an enclosure to DEQ's December 13, 2018 letter. Simplot explained that using the geometric mean of the highest no observed effect concentration and EC_{10} to derive the whole-body criterion value is more conservative than the whole-body criterion value equivalent to the egg EC_{10} (i.e., 14 mg/kg dw) and provides a threshold greater than the highest no observed effect concentration for the whole-body tissue relationship to survival. In addition, a population level analysis of

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[33] Formation Environmental. 2017. *Revised, Proposed Site-Specific Selenium Criterion for Hoopes Springs, Sage Creek, Crow Creek near the Smoky Canyon Mine*. Prepared for the J.R. Simplot Company. October 2017.

[34] State of Idaho Department of Environmental Quality. 2018. *Idaho Aquatic Life Criteria for Selenium – Supplemental Technical Justification*, Docket 58-0102-1701. June 2018.

[35] Formation Environmental. 2017. *Revised, Proposed Site-Specific Selenium Criterion for Hoopes Springs, Sage Creek, Crow Creek near the Smoky Canyon Mine*. Prepared for the J.R. Simplot Company. October 2017.

brown trout was provided as another line of evidence to demonstrate the value is protective. The EPA reviewed this additional information and determined that it provides a scientifically defensible rationale that supports the derivation of the whole-body value.

The muscle value and the lentic and intermittent water column values are not site-specifically derived but instead are Idaho's statewide values for these criterion elements. These values are consistent with the EPA's 304(a) national recommendation.

Based on the review of DEQ's technical support documents, the EPA has determined that the use of brown trout data as the most sensitive resident species at the site to derive tissue elements for the site-specific criterion provides protection to all resident species at the site. Although the approach using the most sensitive species at the site deviates from the EPA's recalculation procedure guidance,[36,37] the EPA reviewed the rationale and supporting information DEQ provided as well as the additional information provided by Simplot regarding this approach and the derivation of the fish tissue elements[38,39] and has determined the site-specific criterion is based on a sound scientific rationale and protects the aquatic life uses of cold water and salmonid spawning in Sage Creek.

Footnotes #1 and #2 to the site-specific criterion values at IDAPA 58.01.02.0287.03 specify that the fish tissue elements supersede the water elements and the frequency component is not to be exceeded for the fish tissue elements. Footnote #3 specifies the circumstance when the water column values are the applicable criterion element over the tissue element. Footnotes #1, #2 and #3 are consistent with the EPA's 304(a) national recommendation.

Based on the EPA's review of DEQ's technical support documents, and the supplemental information provided by DEQ in the December 13, 2018 letter to the EPA,[40] the EPA has determined that the site-specific tissue criterion elements and the water column elements for Sage Creek, including parts of footnotes #1, #2, #3, to the criterion values in the table provided at IDAPA 58.01.02.287.03 and the application of the statewide lotic, lentic and intermittent water column criterion elements specified at IDAPA 58.01.02.210.01 footnote r, are based on sound science, are consistent with the EPA's 304(a) national recommendation, and will protect Idaho's aquatic life designated uses of cold water and salmonid spawning in these waters.

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[36] EPA. 1985. *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. PB85-227049. US Environmental Protection Agency, Office of Research and Development.

[37] EPA. 2013. *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic life Criteria,* EPA-823-R-13-001. U.S. Environmental Protection Agency, Office of Science and Technology.

[38] Formation Environmental. 2017. *Revised, Proposed Site-Specific Selenium Criterion for Hoopes Springs, Sage Creek, Crow Creek near the Smoky Canyon Mine*. Prepared for the J.R. Simplot Company. October 2017.

[39] State of Idaho Department of Environmental Quality. 2018. *Idaho Aquatic Life Criteria for Selenium – Supplemental Technical Justification*, Docket 58-0102-1701. June 2018

[40] Letter dated December 13, 2018, from Jason Pappani, Idaho Department of Environmental Quality, Boise, Idaho, to Lisa Macchio, Region 10, U.S. Environmental Protection Agency, Seattle, Washington. December 13, 2018. (21 pages).

5. The EPA Approval of Idaho's New Site-Specific Selenium Aquatic Life Criterion at IDAPA 58.01.02.287.04, Subsection of the Salt Subbasin – Crow Creek

The EPA Action

In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves IDAPA 58.01.02.287.04, and the fish muscle criterion element, lentic and intermittent (short term) exposure water column criterion elements at IDAPA 58.01.02.210.01 table footnote r, as applicable to the waters identified at IDAPA 58.01.02.287.04.

The EPA approves the following site-specific criterion magnitude components applicable to these waters:

- Fish egg/ovary magnitude value of 20.5 mg/kg dw.
- Fish whole body magnitude value of 12.5 mg/kg dw.
- Fish muscle magnitude value of 11.3 mg/kg dw established at IDAPA 58.01.02. 210.01 table, footnote r.
- Water column magnitude value of 4.2 µg/L in lotic aquatic systems.
- Water column magnitude value of 1.5 µg/L in lentic aquatic systems established at IDAPA 58.01.02.210.01 table, footnote r.
- Water column intermittent exposure magnitude equation established at IDAPA 58.01.02.210.01 table, footnote r:

$$\frac{WQC - C_{bkgrnd}(1 - f_{int})}{f_{int}}$$

where WQC is the water column element, for either lentic or lotic waters; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to one day).

Lastly, the EPA approves the following parts of footnotes #1, #2, and #3 to the criterion values in the table provided at IDAPA 58.01.02.287.04:

1. Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Not to be exceeded;

2. Fish tissue supersedes water column element when both fish tissue (whole-body) and water concentrations are measured. Not to be exceeded;

3. Water column values are derived using the empirical BAF method. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data.

These footnotes specify that the fish tissue elements supersede the water elements and the frequency component is not to be exceeded for the fish tissue elements. The duration component of the fish tissue criterion, although not specified, is assumed to be instantaneous.

The EPA Rationale

Idaho derived the site-specific selenium fish tissue elements using the most sensitive species approach. The most sensitive species approach is based on deriving a criterion that is protective of the most sensitive species that resides at the site while ensuring protection of all other resident species. The most sensitive resident species approach is appropriate for this site because this water supports a naturally limited fish assemblage (the taxa most sensitive to selenium) and the assemblage has been well characterized through extensive monitoring. In addition, the resident species at this site differs in both the assemblage of species and their sensitivity relative to those used to develop the national recommended criterion. As discussed in Idaho's technical support documents, based on site survey data, rainbow trout are absent in Sage Creek and Hoopes Spring, but potentially present in Crow Creek. Therefore, for Crow Creek, the site-specific egg-ovary value is based on brown trout, because it is the most sensitive resident species for the egg-ovary tissue criterion element. The whole-body value is based on rainbow trout, because rainbow trout is the most sensitive resident species for the whole-body tissue criterion element. [41, 42]

The egg-ovary value was derived using Simplot's brown trout dataset.[43] The whole-body value was derived by converting the rainbow trout egg-ovary value from the EPA's 304(a) national recommendation into a whole-body value using a conversion factor of 1.96 for the rainbow trout genus. A muscle tissue value is not site-specifically derived but instead is the state-wide value, which is consistent with the muscle value in the EPA's 304(a) national recommendation. The EPA reviewed this information and determined that it provides a scientifically defensible rationale that supports the derivation of the egg ovary and whole-body values.

The water column criterion element is derived using the median BAF, which was calculated using paired water and fish tissue data from Crow Creek. The lentic and intermittent water column values are not site-specifically derived but instead are the state-wide values for these elements which is consistent with the EPA's 304(a) national recommendation.

Footnotes #1 and #2 to the site-specific criterion values at IDAPA 58.01.02.0287.04 specify that the fish tissue elements supersede the water elements and the frequency component is not to be

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[41] Formation Environmental. 2017. *Revised, Proposed Site-Specific Selenium Criterion for Hoopes Springs, Sage Creek, Crow Creek near the Smoky Canyon Mine*. Prepared for the J.R. Simplot Company. October 2017.

[42] State of Idaho Department of Environmental Quality. 2018. *Idaho Aquatic Life Criteria for Selenium – Supplemental Technical Justification*, Docket 58-0102-1701. June 2018.

[43] Formation Environmental. 2017. *Revised, Proposed Site-Specific Selenium Criterion for Hoopes Springs, Sage Creek, Crow Creek near the Smoky Canyon Mine*. Prepared for the J.R. Simplot Company. October 2017.

exceeded for the fish tissue elements. Footnote #3 specifies the circumstance when the water column values are the applicable criterion element over the tissue element. The duration component of the fish tissue criterion, although not specified, is assumed to be instantaneous. Footnotes #1, #2 and #3 are consistent with the EPA's 304(a) national recommendation.

Based on the EPA's review of DEQ's technical support documents, and the supplemental information provided by DEQ in the December 13, 2018 letter to the EPA,[44] the EPA has determined that the site-specific tissue criterion elements and the water column elements for Crow Creek, including parts of footnotes #1, #2, #3, to the criterion values in the table provided at IDAPA 58.01.02.287.04 and the application of the statewide lentic and intermittent water column criterion elements specified at IDAPA 58.01.02.210.01 footnote r, are based on sound science, are consistent with the EPA's 304(a) national recommendation, and will protect Idaho's aquatic life designated uses of cold water and salmonid spawning in these waters.

6. The EPA Approval of Idaho's New Site-Specific Selenium Aquatic Life Criterion for Non-Sturgeon Waters at IDAPA 58.01.02.287.05.

The EPA Action

In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA approves IDAPA 58.01.02.287.05.b. which specifies the magnitude components of the site-specific fish tissue criterion elements and the application of the statewide lentic, lotic and intermittent exposure water column criterion elements at IDAPA 58.01.02.210.01, table footnote r to the waters and approves the application of this criterion to the waters identified in IDAPA 58.01.02.287.05.a. The EPA has determined that the site-specific selenium tissue criterion elements and the water column criterion elements at IDAPA 58.01.02.210.01 table footnote r, for those waters identified in IDAPA 58.01.02.287.05.a. are based on sound science and are protective of Idaho's aquatic life uses of cold water and salmonid spawning in these waters.

The EPA approves the following site-specific criterion magnitude components at IDAPA 58.01.02.287.05.b applicable to the waters identified in IDAPA 58.01.02.287.05.a.:

- Fish egg/ovary magnitude value of 19 mg/kg dw.
- Fish whole body magnitude value of 9.5 mg/kg dw.
- Fish muscle magnitude value of 13.1 mg/kg dw.
- Water column magnitude value of 3.1 µg/L in lotic aquatic systems established at IDAPA 58.01.02.210.01 table footnote r.
- Water column magnitude value of 1.5 µg/L in lentic aquatic systems established at IDAPA 58.01.02.210.01 table, footnote r.

[44] Letter dated December 13, 2018, from Jason Pappani, Idaho Department of Environmental Quality, Boise, Idaho, to Lisa Macchio, Region 10, U.S. Environmental Protection Agency, Seattle, Washington. December 13, 2018. (21 pages).

- Water column intermittent exposure magnitude equation established at IDAPA 58.01.02.210.01 table, footnote r:

$$\frac{WQC - C_{bkgrnd}(1 - f_{int})}{f_{int}}$$

where WQC is the water column element, for either lentic or lotic waters; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to one day).

The EPA approves the following parts of footnotes #1 and #2 to the criterion values in the table provided at IDAPA 58.01.02.287.05.b. These footnotes specify that the fish tissue elements supersede the water elements and the frequency component is not to be exceeded for the fish tissue elements. The duration component of the fish tissue criterion although not specified is assumed to be instantaneous.

1. *Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Not to be exceeded;*
2. *Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Not to be exceeded;*

As discussed in detail in Section IV below, the EPA is not acting on specific parts of footnotes #1 and #2, because the EPA does not consider these water quality standards subject to the EPA review and action under CWA Section 303(c).

The EPA Rationale

Idaho derived the site-specific fish tissue criterion elements consistent with the EPA's guidance on site-specific species deletion[45] and criterion recalculation.[46] This procedure is used to account for differences in selenium sensitivity between resident species within the site and those species used to derive the statewide criterion. DEQ did not derive site-specific water column criterion elements because they did not have the necessary site-specific bioaccumulation information. Thus, the water column criterion elements set out in the statewide rule (IDAPA 58.01.02.210.01 table footnote r) are the applicable criterion for the water bodies identified at IDAPA 58.01.02.287.05.a.

As specified in the EPA's recalculation procedure for deriving aquatic life criteria,[47] a species included in the national dataset for the pollutant under consideration must be retained and used to

[45] EPA. 2013. *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic life Criteria,* EPA-823-R-13-001. U.S. Environmental Protection Agency, Office of Science and Technology.
[46] EPA. 1985. *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. PB85–227049. US Environmental Protection Agency, Office of Research and Development.
[47] EPA. 2013. *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic life Criteria,* EPA-823-R-13-001. U.S. Environmental Protection Agency, Office of Science and Technology.

develop a site-specific criterion if the species occurs within the site. However, if a species in the national dataset does not occur within the site and does not serve as a surrogate for another species, it may be deleted from the dataset used to calculate the site-specific criterion.

As discussed in DEQ's technical support document, the procedure for developing the site-specific criterion for non-sturgeon waters included:

- Definition of the geographic scope of the SSC (i.e., the site).
- Determination of resident fish species that occur at the site.
- Recalculation of the tissue criterion value based on resident fish species at the site.

The procedure DEQ employed for delineating the site, included identification of waters located outside of the white sturgeon's historical range that do not provide required habitat elements to maintain a self-propagating population. Lastly, to further protect water quality where white sturgeon may be present, DEQ excluded certain upstream waters where white sturgeon are not expected to be found but that contribute to downstream water quality. Thus, the site established for the site-specific criterion for non-sturgeon waters is limited to waterbodies outside of the historical range of white sturgeon, subbasins that do not drain directly into those waterbodies, and waterbodies not designated as critical habitat for bull trout or anadromous salmonids.[48]

An additional element with regard to the delineation of the geographic scope of the site-specific criterion and thus site definition, includes DEQ's policy decision that waters where white sturgeon are stocked outside their historical range are not considered to be resident fish for purposes of the recalculation procedure. In following with that policy decision, the site-specific tissue criterion element is not intended to provide protection to waters where hatchery raised sturgeon is stocked and introduced by Idaho Department of Fish and Game (IDFG) outside of white sturgeon's historical range. DEQ's policy decision was based in part on information provided by IDFG. As discussed in the technical support document, IDFG's basis for stocking white sturgeon in certain waters in Idaho is solely to expand sport fishing opportunity and not to restore a self-propagating population.[49] Based on the information provided in DEQ's technical support document, the EPA finds DEQ's decision on stocked sturgeon an acceptable approach regarding resident species at the site.

As discussed and presented in the technical support document, DEQ determined resident fish at the site from state and federal spatial datasets, scientific literature, biological opinions, and federal register notices regarding critical habitat for threatened and endangered fish species in Idaho. DEQ followed the species deletion process consistent with the EPA's guidance and recalculated selenium egg-ovary, whole-body and muscle tissue values by deleting the sturgeon data. In addition, DEQ demonstrated that white sturgeon is not a surrogate for any other species occurring at the site and there are no resident species in the same genus, family, or order that occur at the site. Multiple species in the same class as white sturgeon do occur at the site; however, they, or their surrogate, are in the national toxicity dataset.

DEQ's technical support document provides a detailed description and discussion of the procedures, rationale and the calculations used to derive the egg-ovary, whole body and muscle

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[48] State of Idaho Department of Environmental Quality. 2017. *Justification for Site-Specific Selenium Criterion for Aquatic Life in Portions of Idaho.* November 2017.

[49] IBID

site-specific tissue criterion elements based on using the EPA's recalculation procedure by deleting sturgeon from the national dataset. Footnotes #1 and #2 to the site-specific criterion values at IDAPA 58.01.02.0287.05.b. specify that the fish tissue elements supersede the water elements and the frequency component is not to be exceeded for the fish tissue elements. Footnotes #1, #2 are consistent with the EPA's 304(a) national recommendation.

The EPA has determined that the site-specific tissue criterion elements including parts of footnotes #1, #2, to the tissue criterion elements provided in the table at IDAPA 58.01.02.287.05.b. and the statewide lentic and intermittent water column criterion elements specified at IDAPA 58.01.02.210.01 footnote r, are consistent with the EPA's 304(a) national recommendation and will protect Idaho's aquatic life designated uses of cold water and salmonid spawning in the waters listed in IDAPA58.01.02.287.05.a.

F. The EPA Disapproval of the Application Idaho's New and Revised Selenium Aquatic Life Water Quality Criterion at IDAPA 58.01.02.287.03 to North Fork Sage and Pole Canyon Creeks

The EPA Action
In accordance with its CWA authority, 33 U.S.C. 1313(c)(3) and 40 CFR § 131.11, the EPA disapproves the application of IDAPA 58.01.02.287.03 to North Fork Sage Creek and its tributaries and Pole Canyon Creek and its tributaries.

The EPA Rationale
DEQ has not provided sufficient data to support the application of the Sage Creek site-specific criterion to North Fork Sage Creek and its tributaries and Pole Canyon Creek and its tributaries as required under 40 CFR § 131.6. Therefore, the EPA is unable to determine whether the site-specific criterion would be protective of the designated aquatic life uses in these waters.

In October 2018, the EPA asked DEQ to supplement its submittal with additional information, which was provided on December 13, 2018.[50] The EPA has conducted a thorough review of DEQ's technical support documents, as well as the supplemental information provided to the EPA by DEQ and Simplot and has determined that the available information does not support the application of the site-specific criterion for Sage Creek to North Fork Sage and Pole Canyon Creeks or their tributaries.

The EPA provided DEQ and Simplot with a detailed scientific analysis of the site-specific criterion and discussed the EPA's concerns during two meetings with DEQ and Simplot in April and May 2019. Subsequent to the meetings, on May 9, 2019, Simplot sent a letter to DEQ acknowledging that the data for North Fork Sage and Pole Canyon Creeks are limited and more data are needed to establish a site-specific criterion that is protective of the beneficial uses in these waters. Further, Simplot indicated that they plan to submit a draft work plan to DEQ that includes field studies, such as monitoring and collection of selenium in surface waters and fish tissue, as well as selenium analysis in sediments, periphyton and prey items of brown trout.[51] These

[50] October 24, 2018. EPA's Additional questions for Idaho re: the selenium SSCs.
[51] Letter dated May 9, 2019, from Alan Prouty, Vice President, Environmental and Regulatory Affairs, J.R.

additional proposed studies may provide support for a future site-specific criterion to North Fork Sage and Pole Canyon Creeks (and their tributaries) such that DEQ may be able to submit a revised WQS at a later date.

The EPA has determined that due to the lack of data to support the application of the site-specific criterion to North Fork Sage and Pole Canyon Creeks (and their tributaries), DEQ has not sufficiently demonstrated that the aquatic life uses of cold water and salmonid spawning will be protected by IDAPA 58.01.02.287.03.

1. The EPA's Detailed Review of the Site-Specific Criterion for North Fork Sage and Pole Canyon Creeks

The typical process of deriving a site-specific water column criterion element for selenium entails the collection of either paired fish and water column data to calculate a BAF or paired particulate and water column data to calculate an enrichment factor (EF) to use in a mechanistic model of bioaccumulation. For the latter approach, biota may also be collected to calculate trophic transfer factors (TTFs) to apply to the mechanistic model.

For North Fork Sage Creek and its tributaries (Northern Sites), no data were collected to derive a BAF or a robust EF. Without data to derive a BAF, the EPA attempted to determine whether the proposed water column criterion element was appropriate using the mechanistic model approach. Simplot provided some data from the Remedial Investigation/ Feasibility Study and historical monitoring studies to calculate a limited number of EFs, but the amount of data provided were insufficient to fully characterize North Fork Sage and Pole Canyon creeks. Also, the limited data that were provided indicated that the EFs for these sites were different (higher) than the EFs from the rest of the Sage Creek sites (Southern Sites). Making several assumptions, the EPA attempted to calculate protective water column values from these data and found that the data indicated that a lower water column criterion element would be more appropriate.

Given the age of the data and that for several sites there were only 1 or 2 data points, the EPA inquired whether additional data were available. As only additional water column data were available, Simplot used a regression to predict more EFs from water column concentrations for one sampling location in the Northern Sites. However, the provided analysis inherently assumed bioaccumulation properties at one site were predictive of those properties at another site without assessing the veracity of this assumption. Secondly, EFs were not or could not be predicted for the other sampling locations within the Northern Sites, again resulting in insufficient data to determine whether the SSC was appropriate for these Northern Sites.[52]

The EPA also evaluated the benthic invertebrate tissue concentrations provided by Simplot. The tissue concentrations at two of the sites were within the range of values for the Southern Sites but the water column concentrations were very different between the sites. This information indicates that biota were accumulating selenium more efficiently in the Northern Sites. Two other sampling

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Simplot Company, to Barry Burnell, Administration, Water Quality Division, Idaho Department of Environmental Quality.

[52] February 26, 2019. EPA Analysis of the application of the Sage Creek Water Column Criterion Element to North Fork Sage Creek and tributaries, including Pole Canyon Creek.

locations in the Northern Sites, had lower benthic invertebrate tissue concentrations than those in the Southern Sites; however, these sites also had lower water column concentrations.[53]

Given that the current data available for North Fork Sage Creek and its tributaries are limited and that the limited data indicate that a lower water column value would be appropriate for these waters, the EPA cannot conclude at this time that 16.7 µg/L is the appropriate and protective water column criterion element for these waters.

During the period of time from October 2018 to May 2019 the EPA provided the Agency's analysis and discussed the EPA's concerns with DEQ and Simplot. As a result, DEQ and Simplot agreed that additional site-specific data for these waters is needed and Simplot has agreed to develop a workplan to address the additional data collection that would be needed to demonstrate the protectiveness of this site-specific criterion for these waters or derivation of an alternate protective criterion.[54]

2. Selenium Criterion in Effect for Clean Water Act Purposes in North Fork Sage and Pole Canyon Creeks

Since the EPA is disapproving the application of the site-specific criterion to North Fork Sage Creek and its tributaries and Pole Canyon Creek and its tributaries, the applicable selenium criterion for these waterbodies is the selenium criterion that the EPA is approving today at IDAPA 58.01.02.287.05.b as provided below along with parts of footnotes #1 and #2:

Fish Tissue Elements (mg/kg dw)			**Water Column Elements (µg/L)**		
Egg-Ovary	Whole Body	Muscle	Water Lentic	Water Lotic	Short Term/ Intermittent
19.0[1]	9.5[2]	13.1[2]	1.5	3.1	Intermittent Exposure Equation at IDAPA 58.01.02.210.01. Footnote #4 to footnote r

1. *Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Not to be exceeded;*
2. *Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Not to be exceeded*

Since there is an EPA-approved WQS applicable to these waterbodies, the EPA's disapproval does not trigger the need for promulgation of a federal standard.

Furthermore, as a result of the EPA disapproval, the following rule language at IDAPA 58.01.02.287.03 and provided in highlight and strikeout below, is not in effect for Clean Water Act purposes:

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[53] IBID

[54] Letter dated May 9, 2019, from Alan Prouty, Vice President, Environmental and Regulatory Affairs, J.R. Simplot Company, to Barry Burnell, Administration, Water Quality Division, Idaho Department of Environmental Quality.

> ***287.03 Subsection of Salt Subbasin - Sage Creek.*** *Sage Creek – source to mouth (unit US-9) including, Hoopes Spring channel downstream of the spring complex, South Fork Sage Creek downstream of the spring complex, Sage Creek downstream of the confluence of Hoopes Spring with Sage Creek to its confluence with Crow Creek, ~~North Fork Sage Creek and tributaries (including Pole Canyon Creek).~~ Site-specific egg-ovary and whole-body criterion elements for these water bodies are set out in the following table. The muscle, lentic water column, and short-term water column criterion elements set out in Subsection 210.01., table footnote r, are also applicable to the water bodies identified in this subsection.*

3. Remedy to Address the Disapproval

In order to determine what water column criterion element would be protective for these waters, the EPA suggests collecting paired fish and water column data from North Fork Sage Creek to calculate a site-specific BAF and subsequently a water column criterion element or sufficient data (EFs and possibly TTFs) to populate the mechanistic model. For Pole Canyon Creek and all tributaries, the EPA recommends collecting sufficient data to populate the mechanistic model. This would require multiple data points of paired particulate samples and water samples to calculate appropriate EFs for these sites. Additional data may also be collected to determine the most appropriate trophic transfer factors at the site, but site-specific EF data are the most important parameter to have in order to run the mechanistic model effectively. The EPA recommends that EFs be calculated from algae, detritus, or sediment. However, because the correlation between selenium in the water column and sediment is weaker than for detritus or algae, the EPA recommends using sediment measurements only if data from another particulate type are also available and can be averaged with the sediment data. Simplot has stated that they will be developing a workplan to address future monitoring and data collection.[55]

IV. Provisions Which the EPA Has Determined Are Not Water Quality Standards

As discussed above in Section II.A., the EPA considers four questions when evaluating whether a particular provision is a new or revised WQS. If all four questions are answered "yes" then the provision would likely constitute a new or revised WQS that the EPA has the authority and duty to approve or disapprove under CWA section 303(c)(3).[56]

Parts of #1, #2 and #3 to footnote r of Idaho's selenium criterion at IDAPA 58.01.02.210.01 provide the following statements:

> *r #1 - Single measurement of an average or composite sample of at least five (5) individuals of the same species. DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*
>
> *r #2 - Single measurement of an average or composite sample of at least five (5)*

[55] IBID

[56] See the EPA's *What is a New or Revised Water Quality Standard Under CWA 303(c)(3)? Frequently Asked Questions*, October 2012.

> *individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. DEQ will evaluate all representative whole body or muscle data to determine compliance with this criterion element*
>
> r #3 - *In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance using methods provided in Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater, EPA-822-R-16-006, Appendix K: Translation of a Selenium Fish Tissue Criterion Element to a Site-Specific Water Column Value (June 2016).*

The EPA has reviewed the above language and concluded that these specific statements contained in #1, #2 and #3 to footnote r of Idaho's selenium criterion at IDAPA 58.01.02.0210.01 do not describe a desired ambient condition of a waterbody to support a particular designated use. Rather, these statements provide information related to sampling and monitoring for compliance. Therefore, the EPA does not consider these WQS subject to the EPA review and action under section 303(c) of the CWA and is not acting on these specific statements.[57]

New footnote "s" replaces Idaho's selenium acute criterion and provides the following explanatory statement:

> *s. There is no specific acute criterion for aquatic life; however, the aquatic life criterion is based on chronic effects of selenium on aquatic life and is expected to adequately protect against acute effects.*

Footnote s states that Idaho does not have an acute aquatic life criterion for selenium and that the chronic criterion is expected to protect against acute effects. As discussed in the EPA's 304(a) national recommendation for selenium, although selenium may cause acute toxicity at high concentrations, the most deleterious effect on aquatic organisms is due to its bioaccumulative properties. These chronic effects are found at lower concentrations than acute effects. Consequently, the EPA's 304(a) national recommendation for chronic criterion is reflective of the reproductive effects of selenium on fish species. In addition, the EPA's 304(a) national recommendation includes an intermittent element to address short-term exposures that contribute to chronic effects through selenium bioaccumulation.[58]

The EPA has reviewed and concluded that footnote s does not establish a legally binding requirement, and it does not describe a desired ambient condition of a waterbody to support a particular designated use. Rather, the provision is merely explanatory, stating that there is no acute selenium criterion, and that Idaho expects that the chronic criteria would protect against acute effects. Therefore, the EPA does not consider it a WQS subject to the EPA review and action under section 303(c) of the CWA and is not acting on this provision.

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[57] IBID.

[58] USEPA (U.S. Environmental Protection Agency). 2016. *Aquatic Life Ambient Water Quality Criterion for Selenium–Freshwater 2016.* EPA 822-R-16-006. U.S. Environmental Protection Agency, Office of Water, Washington, DC. https://www.epa.gov/wqc/aquatic-life-criterion-selenium-documents

Parts of footnotes #1, #2, and #3 to Idaho's selenium site-specific criterion at IDAPA 58.01.02.287.01, for the subsection of the Blackfoot Subbasin (unit US-10), provide the following statements:

1. *Single measurement of an average or composite sample of at least five (5) individuals of the same species. DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Single measurement of an average or composite sample of at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. DEQ will evaluate all representative whole-body or muscle data to determine compliance with this criterion element.*

3. *Water column values are derived using the empirical BAF method. For comparative purposes only, the example value displayed in this table represents the lotic water column value for Sheep Creek based on the average BAF for Cutthroat Trout among all sampling locations and years.*

Parts of footnotes #1, #2, and #3 to Idaho's selenium site-specific criterion at IDAPA 58.01.02.287.02, for the subsection of the Bear Lake Subbasin (unit B-22), provide the following statements:

1. *Single measurement of an average or composite sample of at least five (5) individuals of the same species. DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Single measurement of an average or composite sample of at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. DEQ will evaluate all representative whole-body or muscle data to determine compliance with this criterion element.*

3. *Water column values are derived using the empirical BAF method. For comparative purposes only, the example value displayed in this table represents the lotic water column value for Georgetown Creek, upstream of the intermittent reach, based on the average BAF for Brook Trout among all sampling locations and years.*

Parts of footnotes #1, #2, and #3 to Idaho's site-specific selenium criterion at IDAPA 58.01.02.287.03, for the subsection of the Salt Subbasin- Sage Creek (unit US-9), provide the following statements:

1. *Single measurement of an average or composite sample of at least five (5) individuals of the same species. DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish tissue elements are expressed as a single arithmetic average of tissue concentrations from at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. DEQ*

will evaluate all representative whole-body data to determine compliance with this criterion element.

3. *In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance.*

Parts of footnotes #1, #2, and #3 to Idaho's site-specific selenium criterion at IDAPA 58.01.02.287.04, for the subsection of the Salt Subbasin – Crow Creek (unit US-8), provide the following statements:

1. *Single measurement of an average or composite sample of at least five (5) individuals of the same species. DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish tissue elements are expressed as a single arithmetic average of tissue concentrations from at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. DEQ will evaluate all representative whole-body data to determine compliance with this criterion element.*

3. *In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance.*

Parts of footnotes #1 and #2 to Idaho's site-specific selenium criterion at IDAPA 58.01.02.287.05.b, for waters specified at IDAPA 58.01.02.287.05.a, provide the following statements:

1. *Single measurement of an average or composite sample of at least five (5) individuals of the same species. DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish tissue elements are expressed as a single arithmetic average of tissue concentrations from at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. DEQ will evaluate all representative whole-body or muscle data to determine compliance with this criterion element.*

The EPA has reviewed the above language and concluded that the statements contained in the footnotes specified above do not describe a desired ambient condition of a waterbody to support a designated use. Rather, these statements provide information on sampling and monitoring for compliance. Therefore, the EPA does not consider these WQS subject to the EPA review and action under section 303(c) of the CWA and is not acting on these specific statements.[59]

[59] See the EPA's *What is a New or Revised Water Quality Standard Under CWA 303(c)(3)? Frequently Asked Questions,* October 2012.